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ABSTRACT

This publication consists of two parts: an overview of tech prep in Western Wisconsin and the Tech Prep Strategic Plan for Western Wisconsin. The overview combines reduced-size pages (four to a page) with full-size pages that include the following: the definition of tech prep; legislative mandate; rationale; benefits of tech prep; tech prep philosophy and goals; Affinity process (a quality management tool); tech prep activities continuum; curriculum development procedures; articulation agreements; policies and procedures to plan, develop, and implement the tech prep initiative; discussion of applied academics; course descriptions; and information on career cluster maps. The Tech Prep Strategic Plan consists of three sections. Section 1, Model Components, contains the tech prep philosophy and goals, model (diagram format), standard definitions, and committee and communication structure. These policies and procedures are outlined: high school/Western Wisconsin Technical College articulation; comparison of advanced standing, institutional credit, and postsecondary options; and prototype articulation and contractual agreements. A timeline is followed by general information on the concept of tech prep, including statutory mandate, definition, goals, and a 24-item school-to-work transition resource list. Section 2 on curriculum development provides resources, discusses the applied academics, and describes career cluster maps and their use. Section 3 outlines grant goals and objectives. (YLB)

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TECH PREP: THE WISCONSIN DESIGN

WESTERN WISCONSIN TECHNICAL COLLEGE
304 North Sixth Street
La Crosse, Wisconsin 54602-0908

TECH PREP
WESTERN WISCONSIN

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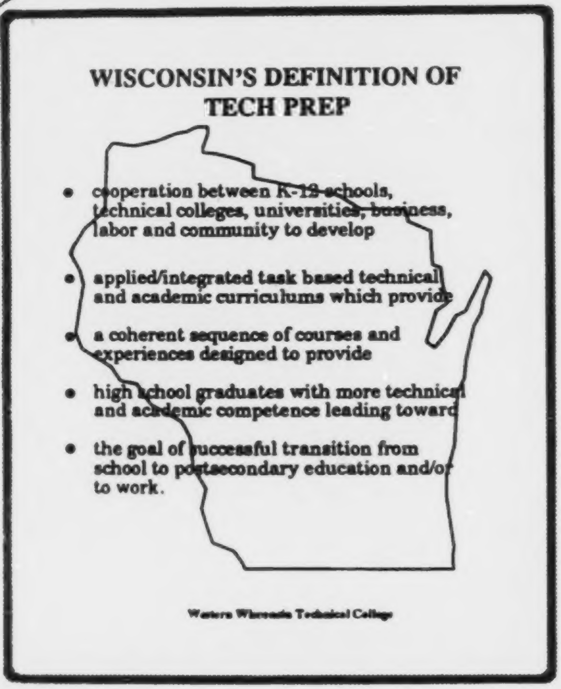

WISCONSIN'S DEFINITION OF TECH PREP

- cooperation between K-12 schools, technical colleges, universities, business, labor and community to develop
- applied/integrated task based technical and academic curriculums which provide
- a coherent sequence of courses and experiences designed to provide
- high school graduates with more technical and academic competence leading toward
- the goal of successful transition from school to postsecondary education and/or to work.

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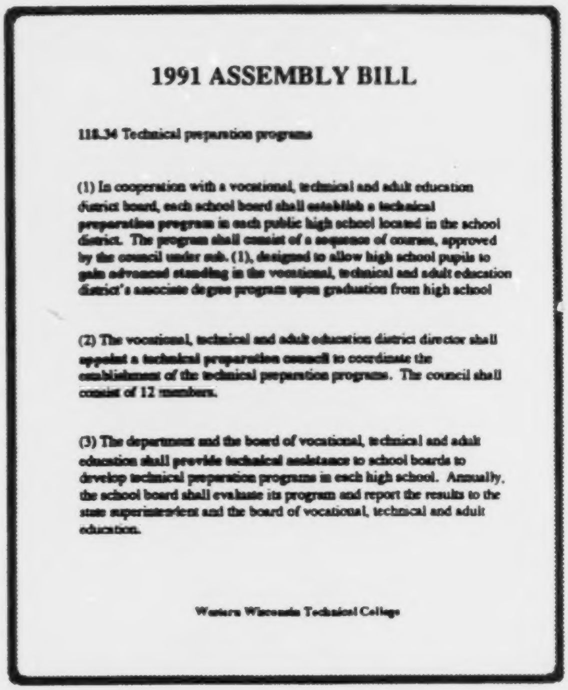

1991 ASSEMBLY BILL

118.34 Technical preparation programs

(1) In cooperation with a vocational, technical and adult education district board, each school board shall establish a technical preparation program in each public high school located in the school district. The program shall consist of a sequence of courses, approved by the council under sub. (1), designed to allow high school pupils to gain advanced standing in the vocational, technical and adult education district's associate degree program upon graduation from high school

(2) The vocational, technical and adult education district director shall appoint a technical preparation council to coordinate the establishment of the technical preparation programs. The council shall consist of 12 members.

(3) The department and the board of vocational, technical and adult education shall provide technical assistance to school boards to develop technical preparation programs in each high school. Annually, the school board shall evaluate its program and report the results to the state superintendent and the board of vocational, technical and adult education.

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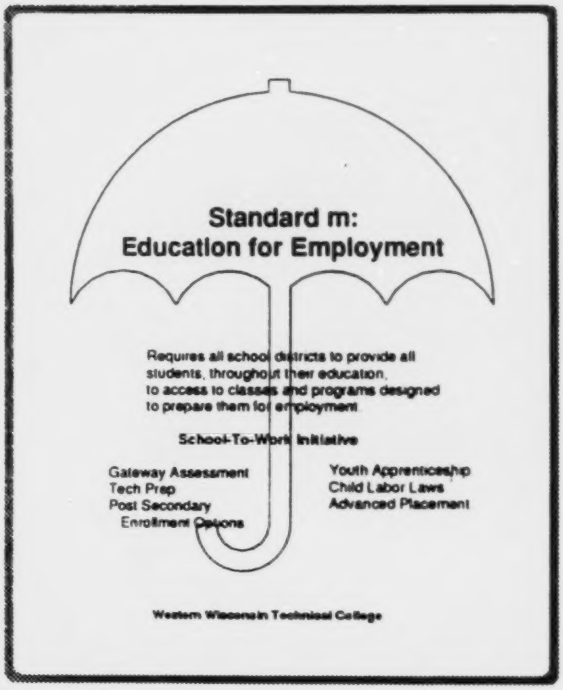

Standard m: Education for Employment

Requires all school districts to provide all students, throughout their education, to access to classes and programs designed to prepare them for employment.

School-To-Work Initiative

Gateway Assessment
Tech Prep
Post Secondary
Enrollment Options

Youth Apprenticeship
Child Labor Laws
Advanced Placement

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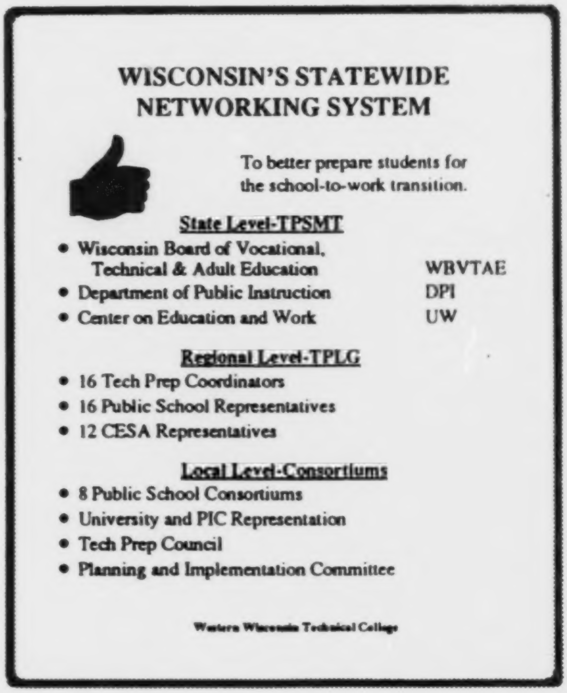

WISCONSIN'S STATEWIDE NETWORKING SYSTEM

To better prepare students for the school-to-work transition.

State Level-TPSMT

• Wisconsin Board of Vocational, Technical & Adult Education	WBVTAE
• Department of Public Instruction	DPI
• Center on Education and Work	UW

Regional Level-TPLG

- 16 Tech Prep Coordinators
- 16 Public School Representatives
- 12 CESA Representatives

Local Level-Consortiums

- 8 Public School Consortiums
- University and PIC Representation
- Tech Prep Council
- Planning and Implementation Committee

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WHY TECH PREP?

.....more than half of our young people leave school without the knowledge or foundation required to find and hold a good job. Unless all of us work to turn this situation around, these young people, and those who employ them, will pay a very high price. Low skills lead to low wages and low profits. Many of these youth will never be able to earn a decent living. And, in the long run, this will damage severely the quality of life everyone hopes to enjoy. None of us, and none of you wants to stand by while this happens.

SCANS Report, 1991

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WHY TECH PREP?

- ✓ 50% of Wisconsin high school graduates enter 4 year colleges/universities--and half do not finish
- ✓ 80% of new jobs will require more than a high school education, but less than a 4-year degree
- ✓ 44% of the jobs by the year 2000 will include collecting, analyzing, synthesizing, storing and retrieving data
- ✓ 72% of Wisconsin business executives stated that they lacked sufficient skilled workers to compete effectively
- ✓ $30 billion are invested annually by business/industry "to supplement what employees learned in school"
- ✓ 4 to 7 times in their lifetime an individual will change careers

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TECH PREP: A WIN/WIN SITUATION

Students
competence and confidence

Employers
better educated workers

High Schools
more students engaged in a purposeful program

Colleges
better prepared students and enhanced skilled programs

America
a world-class workforce

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STUDENT BENEFITS OF TECH PREP

- ☛ Increased Occupational Options
  - Guidance and counseling
  - Career ladders
  - Higher skills for job entry
- ☛ Enhanced Instructional Relevance
  - Basic skills
  - Thinking skills
  - Personal qualities
- ☛ Expanded Competency Attainment
  - Lifelong learning
  - Productive citizens
  - Portfolio assessment

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Tech Prep Philosophy

The purpose of the Tech Prep initiative is to make western Wisconsin more competitive in the world economy by developing and integrating more fully the academic and occupational skills of all segments of the student population. This purpose will be attained through the collaborative efforts of secondary schools, post-secondary institutions, community organizations/agencies and business/industry/labor. The Tech Prep initiative will provide individuals with the opportunity to master the enabling and functional skills they need to become productive workers, lifelong learners and participating citizens.

Tech Prep Goals

1. Ensure that students leave high school with the knowledge, skills and attitudes they need to succeed in a high skills, high wage economy and to participate fully as productive members of their community.
2. Provide an applied foundation in mathematics, natural and social sciences, communications and technology, teaching both the theory and application, through a competency based, highly structured, coordinated and sequential course of study.
3. Develop career clusters and provide technical literacy preparation in the fields of industrial technology, health and human services and business through a comprehensive course of study that integrates high level academic and vocational/technical courses.
4. Facilitate collaborative partnerships among secondary schools, post-secondary institutions, community organizations/agencies and business/industry/labor that will assist students as they make the school to work transition.
5. Promote Planning and Development Programs that will feature career awareness, career exploration and career preparation components for all K-12 students, including special populations and minorities, through the assistance of the Developmental Guidance Program and the Education For Employment Standard.
6. Create a model that offers various entrance and exit options for individuals to earn an associate degree, vocational diploma or vocational certificate in a specific technical field. This model should provide maximum flexibility and include career ladders, bridge programs, youth apprenticeships and linkages with other two and four-year colleges/universities.
7. Design a mechanism that provides for advanced standing and institutional credit options that will eliminate unnecessary duplication of instruction, provide opportunities for advanced training, increase flexibility in scheduling and promote more informed career decision-making.
8. Plan and implement marketing strategies that will enhance the public's understanding, clarify their misconceptions and improve their perceptions of Tech Prep and technical careers.

DEVELOPING A TECH PREP STRATEGIC PLAN

- What do we want to achieve?
- Why do we want to accomplish this?
- Who will be involved?
- How will this task be carried out?
- What resources are needed?
- What are the timelines?
- How do we measure success?

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GETTING STARTED

- Follow State's Direction/Guidelines
  - Legislation
  - Management Team
  - Systematic Plan
- Obtain Tech Prep Resources
  - The Neglected Majority
  - Tech Prep Associate Degree
  - North Carolina Tape
- Contact Colleagues
  - Tech Prep Leadership Group
  - Conference/Workshop Participation
- Develop Strategic Plan
  - Establish Committees/Timeline
  - Formulate Philosophy/Goals
  - Create Model
  - Develop Policies/Procedures

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TECH PREP DEFINITIONS

Advanced Placement
Advanced Standing
Applied Academics
Associate Degree Programs
Basic Skills
Career Decision-Making
Certificate of Initial Mastery
Competency Based Education
Contract
Developmental Guidance
Ed for Employment Standard
Enabling and Functioning Skills
General Education Courses
Institutional Credit Offerings
Internship
Occupational Specific Courses
Post-Secondary Enrollment Options
School-toWork Transition
Vocational Diploma Programs
Advanced Skills
Advanced Status Form
Articulation
Articulation Agreements
Bridge Program
Career Cluster
Career Ladder
Challenge Exam
Core Abilities
DACUM
Elective Courses
Experiential Learning
Gateway Assessment
Integration
Neglected Majority
Tech Prep
Youth Apprenticeship
Vocational Certificate

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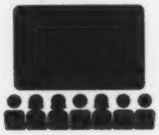
WESTERN'S TECH PREP GOALS

- Implement Strategic Plan
- Inservice Faculties and Staff
- Develop Marketing Strategies
- Foster Career Preparation
- Promote Applied Academics
- Coordinate Curriculum Development
- Facilitate the Articulation Process



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Tech Prep Strategic Plan

Model Components:

- *Philosophy and Goals*
- *Tech Prep Model*
- *Standard Definitions*
- *Committee and Communication Structure*
- *Policies and Procedures*
- *Articulation and Contractual Agreements*
- *Timeline*
- *Understanding the Concept*

Curriculum Development:

- *Resources and Activities*
- *Applied Academics*
- *Career Cluster Mapping*

Grant Activities:

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AFFINITY DIAGRAMS

An Affinity Diagram is a tool that is used to gather large amounts of language data (ideas, opinions, issues, etc.), organize it into groupings based on the natural relationship between each item, and define groups of items.

Affinity is an inductive quality management tool that can be used to organize thoughts, foster communication and facilitate planning.

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USES OF AFFINITY

Affinity is a total quality management tool that is used when:

- thoughts are in chaos,
- addressing large and complex issues,
- breakthrough thinking is required,
- themes must be identified,
- facilitating communication, or
- support for a solution is essential.

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AFFINITY PROCEDURES

1. Assemble the right team.
2. State the issued to be considered.
3. Individually generate and record ideas.
4. Randomly lay out completed cards.
5. Sort cards into related groups.
6. Discuss ideas and groupings.
7. Create headers for groupings.
8. Summarize the clusters into philosophy and goal statements.

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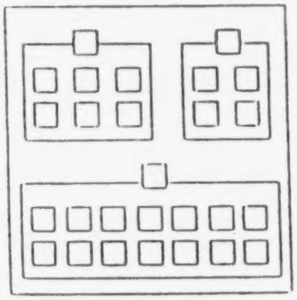
AN AFFINITY DIAGRAM



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THE AFFINITY PROCESS

Affinity Diagrams are a tool that is used to gather large amounts of language data (ideas, opinions, issues, etc.), organize it into groupings based on the natural relationship between each item, and define groups of items. Affinity is an inductive quality management tool that can be used to organize thoughts, foster communication and facilitate planning.

The Affinity Process lends itself to the following applications:

- thoughts are in chaos,
- addressing large and complex issues,
- breakthrough thinking is required,
- themes must be identified,
- facilitating communication, or
- support for a solution is essential

The Affinity Process consists of the following eight steps:

1. Assemble the right team.
2. State the issue to be considered. **"What is Tech Prep?"**
3. Individually brainstorm all of the ideas related to the question. Record each idea on a Post-it. Put one and only one idea on a Post-it and be sure it is stated clearly. Continue to brainstorm until everyone has run out of ideas.
4. Randomly place each idea Post-it on a wall/large sheet of paper so all team members can view them.
5. Group the Post-its according to related ideas, with a minimal amount of talking.
    - Place in vertical rows.
    - Continue with all team members participating until the Post-its stop moving and everyone can live with the groupings.
    - Some ideas may not fit into groups, let these stand alone.
    - Some statements may fit into more than one group, please clarify.
    - Keep the process moving
6. Discussion of ideas and groupings. Dialogue to rationalize and justify clusters.
7. Create headers for the groupings. Try and find one statement in each group which clearly and concisely summarizes the meaning of that group. Place the statement at the top of its group as a header. (You may discover that you still want to move Post-its.)
8. Summarize the clusters into a philosophy and goal statements.

DEVELOPING A TECH PREP ACTION PLAN

GOAL OBJECTIVE:

TASK (What do we want to achieve)	STAFF RESPONSIBLE (Who will be involved?)	RESOURCES (What resources are needed?)	TARGET DATES (What are the timelines?)	EVALUATION CRITERIA (How do we measure success?)

12/92

TECH PREP ACTIVITIES CONTINUUM

"People Talking To People"

Faculty Exchanges
On-Site Visits
Informal Socials
Tech Prep Workshops

Career Cluster Mapping
Applied Academics
Curricular Seminars
Development of Units

Focus Sessions
Articulation
- Advanced Standing
- Institutional Credit
- PSEO

Program Modifications

ONE
ROAD
TO
SUCCESS

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WESTERN'S PROCEDURES FOR CURRICULUM DEVELOPMENT

- Acquire DACUM studies, curricular resources, assessment data, etc.;
- Conduct WWTC faculty workshops/ seminars on curriculum development;
- Participate in faculty exchanges, high school visits, state conferences, etc.;
- Develop competency-based, integrated unit/course curricula;
- Design career cluster maps and marketing materials;
- Distribute and explain competencies and curricula materials at regional focus sessions;
- Sign articulation (advanced standing) and contractual (institutional credit) agreements.

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THE 5 C'S OF TECH PREP

"The development of Tech Prep programs, which emphasize five "Cs":

☞ Continuity in learning,

☞ Context-based teaching (applied academics),

☞ Competency-based teaching,

☞ Communication between learning institutions,

☞ Completion of the program with an associate degree/vocational diploma,

...offers students another definition of educational excellence. It is true curricular reform."

Hull and Parnell, 1991

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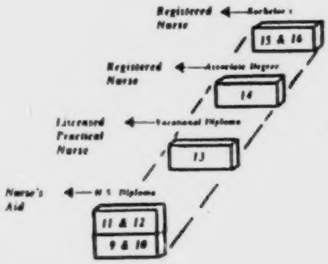
CAREER LADDERS

A curriculum that incorporates a series of entry/exit points, each of which leads to a specific but progressively higher job classification.

Field of Nursing


Registered Nurse ← Bachelor's
15 & 16
Registered Nurse ← Associate Degree
14
Licensed Practical Nurse ← Vocational Diploma
13
Nurse's Aid ← H.S. Diploma
11 & 12
9 & 10

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COMPARISON OF ADVANCED STANDING, PSEO & INSTITUTIONAL CREDIT

MECHANISM	WWTC	HIGH SCHOOL
Advanced Standing Credit		
Articulation Agreement	?----------------- transfers	*(Equivalent Competencies)
Post-Secondary Enrollment Options		
PSEO Form	*(Approved course)----	?
Institutional Credit		
Contract Agreement	?------------*------------ (Approved course)	?

NOTE: *refers to articulated course.

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ARTICULATION AGREEMENTS

Articulation agreements are written agreements between secondary and post-secondary institutions which provide the opportunity for students to receive advanced standing credit for instruction received while attending a secondary institution.

Western Wisconsin Technical College has adopted a three-tiered articulation process:

- Executive Agreement
- Curricular Agreement
- Student Agreement

This process maximizes **ownership**, provides **standardization**, and yet can be customized to fit **individual needs**.

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ARTICULATION AGREEMENTS

A. Executive
  - Defines Tech Prep And Articulation
  - Solicits Commitment Of CEOs
  - Identifies High School Liaison

B. Curricular
  - Provides Details Of Articulation Procedure
  - Identifies Responsibilities By WWTC, High School, Student And General Categories
  - Customizes Agreement Through 46 Provisions To Fit Individual Needs
  - Identifies Agreed-upon Task Competencies For Articulated Courses

C. Student
  - Informs Student And Parents Of Articulation Procedure
  - Rewards Student With Certificate Of Mastery

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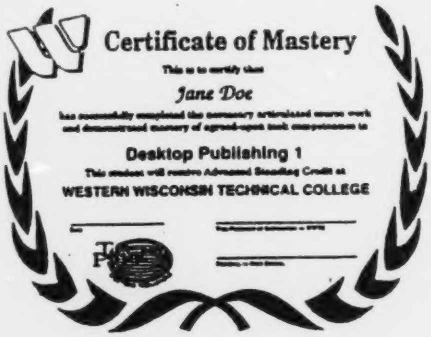
CERTIFICATE OF MASTERY



Certificate of Mastery

Jane Doe

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A COMPARISON OF ADVANCED STANDING, INSTITUTIONAL CREDIT & POST-SECONDARY OPTIONS

Question	Advanced Standing	Institutional Credit	Post-Secondary Enrollment Options
Course Offering Requirements?	Must be matching or equivalent course competencies	Must be approved course in an approved occupational program	Must be approved course in an approved occupational program
Instructor Certification?	Must be DPI certified	Both DPI and VTAE certified	Must be VTAE certified
Fees Assessed?	No tuition or material fees are assessed	Tuition and material fees are assessed	Tuition and material fees are assessed
Pay Application Fee?	Yes, if program declared	Yes, if program declared	Yes, if program declared
Who Receives FTE?	High School	High School andWWTC	WWTC
How Transcripted at WWTC?	CR credit	Letter Grade	Letter Grade
How Transcripted at H.S.?	Letter Grade	Letter Grade	Probably CR credit
Count in WWTC GPA?	No	Yes	Yes
Transferability to Another Post-Secondary Institution?	Unlikely	Possibly	Possibly
Is Concept Stable by Division, Program, Etc.?	Yes, if appropriate	Yes, if appropriate	Yes, if appropriate
Advance Toward Graduation?	Yes, reduces credit number for graduation while in residence	Yes, reduces credit number for graduation while in residence	Yes, reduces credit number for graduation while in residence
WWTC Mechanism?	Articulation Agreement	Contract	Purchase Order or PSEO Form
Advanced Status Form Required?	Yes, must complete	Yes, must complete	Yes, must complete

How does Tech Prep Work?

Policies and procedures have been established to plan, develop and implement the Tech Prep initiative in western Wisconsin. The procedures are as follows:

1. Contact Jerry Redman or Kerry Hogan, the Tech Prep Coordinators at Western Wisconsin Technical College, to learn more about the Tech Prep initiative. Their address is Western Wisconsin Technical College, 304 North 6th Street, 121 Coleman, La Crosse, Wisconsin 54602-0908 or telephone (608) 785-9089.

2. An initial meeting between the administrative staffs of both institutions is held to discuss the concept of Tech Prep, the strategic plan and articulation alternatives.

3. The Executive Articulation Agreement is signed by the Superintendent and Board President of the participating high school and the President and Board Chair of WWTC. By signing this agreement both parties agree to support the appropriate commitment of staff to assist in the development and implementation of articulated curricula for the Tech Prep initiative.

4. Under the terms of the Executive Articulation Agreement, the high school will designate a liaison person whose responsibility will be to establish the procedures necessary to develop and implement a mechanism by which vocational/technical education programs at the secondary and post-secondary levels will interface.

5. A second meeting(s) between the public school and WWTC administrators and/or faculties is conducted to determine where articulation might be possible and what the most appropriate articulation mechanism is. As deemed appropriate, either the Curricular Articulation Agreement or Contractual Agreement is signed identifying specific clauses and/or responsibilities for each participant.

If the Articulation Agreement option is chosen complete steps 6-10.

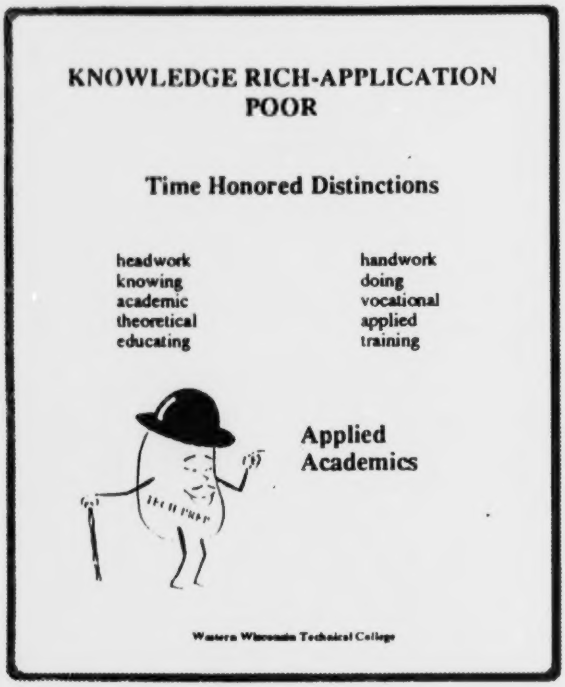
6. Faculty members from both institutions select specific courses, and instructors are chosen to coordinate the curriculum and implement the program. The mutualy agreed-upon task competencies for each articulated course are developed and attached to the Curricular Articulation Agreement.

7. After the articulated course has been completed the Student Articulation Agreement is signed by the appropriate parties.

8. The student applies for admission at Western Wisconsin Technical College through the regular admission procedures, which includes completing a Request For Advanced Status Form.

9. Upon request by the student the secondary school will forward an official transcipt and a copy of the Certificate of Mastery to WWTC .

10. Students who have applied, been accepted and are enrolled will be granted advanced standing credit(s) by WWTC for articulated competencies. Upon issuance of advanced standing credit(s), the student will receive credit(s) toward the appropriate associate degree, vocational diploma or vocational certificate program and the credit(s) will appear on the WWTC transcript by course title and credit hour.



KNOWLEDGE RICH-APPLICATION POOR

Time Honored Distinctions

headwork	handwork
knowing	doing
academic	vocational
theoretical	applied
educating	training

Applied Academics

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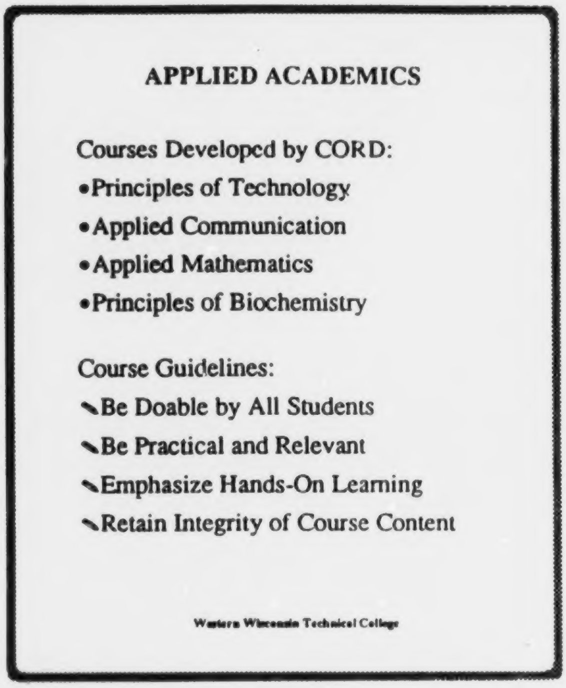

APPLIED ACADEMICS

Courses Developed by CORD:
- Principles of Technology
- Applied Communication
- Applied Mathematics
- Principles of Biochemistry

Course Guidelines:
- Be Doable by All Students
- Be Practical and Relevant
- Emphasize Hands-On Learning
- Retain Integrity of Course Content

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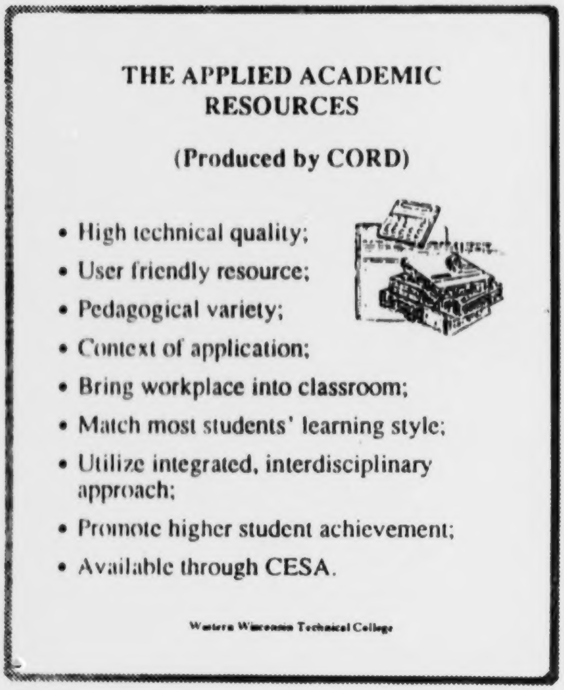

THE APPLIED ACADEMIC RESOURCES

(Produced by CORD)

- High technical quality;
- User friendly resource;
- Pedagogical variety;
- Context of application;
- Bring workplace into classroom;
- Match most students' learning style;
- Utilize integrated, interdisciplinary approach;
- Promote higher student achievement;
- Available through CESA.

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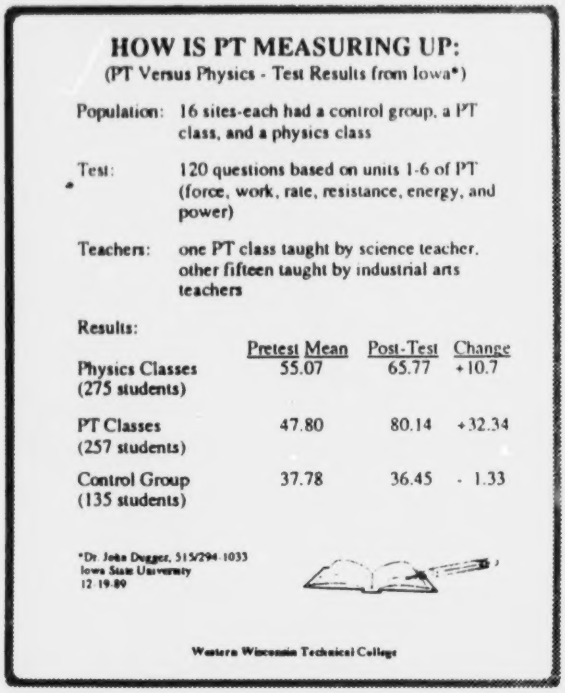

HOW IS PT MEASURING UP:

(PT Versus Physics - Test Results from Iowa*)

Population:	16 sites-each had a control group, a PT class, and a physics class
Test:	120 questions based on units 1-6 of PT (force, work, rate, resistance, energy, and power)
Teachers:	one PT class taught by science teacher, other fifteen taught by industrial arts teachers

Results:

	Pretest Mean	Post-Test	Change
Physics Classes (275 students)	55.07	65.77	+10.7
PT Classes (257 students)	47.80	80.14	+32.34
Control Group (135 students)	37.78	36.45	- 1.33

*Dr. John Dugger, 515/294-1033
Iowa State University
12-19-89

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THE APPLIED ACADEMICS

What Are Applied Academics?

Today, the advent of rapidly changing technologies, both at home and abroad, clearly signals the need for an educational system that combines the best in vocational and academic learning--that is, teaching academic foundation courses in an occupational setting. Such a strategy is generally referred to as applied academics. Applied Academics can be defined as the presentation of subject matter in a way that integrates a particular academic discipline (such as math, science, or English) with personal work-force applications (hands-on laboratories dealing with practical equipment and devices). The mathematics and science principles that are taught, for example, are related to and explained in terms of the operation of real devices and applications in the everyday work world.

The Secretary's Council on Achieving Necessary Skills (SCANS) report released earlier this summer concluded that:

> "The most effective way of teaching skills is "in context"--placing learning objectives within real environments rather than first insisting that students learn in the abstract what they will then be expected to apply."

The SCANS report also suggested that basic skills and problem-solving skills are not sequential, but mutually reinforcing and should be taught together. The SCANS report states that real know-how--foundation and competencies--cannot be taught in isolation, but rather that students need practice in application of their skills.

> "Choosing between teaching the foundation and the competencies is false; students usually become more proficient faster if they learn both simultaneously...Learning 'to know' must never be separated from learning 'to do.'"

Findings from cognitive research (how people learn) indicate that the most productive approaches to teaching are to provide learning opportunities that take the student from (1) concrete to abstract, (2) specific to general, (3) practice to theory, and (4) familiar to unfamiliar. The Applied Academics courses are designed to incorporate all of these findings and to meet the learning styles of the majority of our students.

Applied Academics are not "watered-down" courses. Applied Academics is a coordinated, sequential curriculum designed to be rigorous and challenging while adhering to certain standards of development. Applied Academics course material must make sense to both the college bound and the non-college bound student. The course material must be practical and relevant, related wherever possible to the real world of work. Delivery of the overall course material must emphasize and include hands-on learning experiences in laboratory environments. The integrity of the academic discipline must be retained with all presented course materials.

Why Do We Need Applied Academics Courses?

The complexity and rapid change of modern technology requires that all students have a solid foundation in mathematics, science, and communications. The content taught in these courses must be rigorous, however it must be taught in a manner that meets the learning styles of the majority of our students, not just the learning style of a few. No longer can we speak of the liberal arts versus the practical arts as if we live in two separate worlds. The worker of the future will need to understand both academic concepts as well as technical practices. Future changes in technology will leave behind students brimming with specific job skills but lacking an associated academic foundation. An understanding of basic mathematical and scientific concepts is critical to productive living and working in a technological society.

According to a policy statement by the Council of Chief State School Officers:

> "The labor force needs of this decade and the next century dictate that *all* workers--not just a small elite cohort--but workers at all levels must have well-developed abilities to learn easily and adapt to new circumstances on the job; to read complex materials, understand, and apply them; to use quantitative skills appropriately; to apply tools of production and management; to speak and write effectively; to work cooperatively as members of a team; and to undergo retraining, perhaps repeatedly."

Applied Academics are designed to address the fundamental principles of productivity, teamwork, and flexibility.

Who Is The Target Audience For Applied Academics?

The Applied Academics courses target students in the two middle quartiles of the average high-school population. General education students--often referred to as the "forgotten half"--are not usually headed for a four-year degree program at a university. Students in the middle two quartiles of an average graduating class may go to work immediately after high school or pursue technical careers requiring two years or less of postsecondary education. If our work force is to be competitive in the world market, however, these students also need a strong background in science, math, and communications. Educators have discovered, however, that the learning styles of the "forgotten half" cannot be met by requiring them to earn more credits in traditional academic courses.

Applied Academics courses emphasize the application of mathematical, scientific, and communication principles to the real world and involve the students in hands-on learning. Before coming to high school, many students have developed a certain anxiety towards traditional math and science courses. By being exposed to science in an applied manner, and learning that they are capable of comprehending the material, students are much more likely to take higher level mathematics and science courses in the future.

Description of Courses

Applied Mathematics

Applied Mathematics is a two-year, high-school mathematics course based on an integrated presentation of topics in arithmetic, algebra, geometry, trigonometry, probability, estimation, problem solving, and statistical process control. Applied Math is oriented toward application and practice of mathematical concepts and skills, and practical world-of-work problems that involve extensive measurement and problem-solving activities in health occupations, home economics, agriculture/agribusiness, industrial technology, and business/marketing. Ideally, students should begin Applied Mathematics I in the ninth grade and complete Applied Mathematics II in the tenth grade. This then prepares them for entry into Algebra Two if their high school program calls for higher level mathematics courses. Applied Mathematics is being taught in forty-four states to over eighty thousand students.

Principles of Technology

Principles of Technology is a two-year, high-school course in applied physics for students interested in technical careers. The PT curriculum is designed to be taught in either comprehensive high schools or vocational-technical centers to tenth and eleventh grade students who may or may not be planning to enroll in four-year colleges and universities in engineering or science programs. The PT curriculum consists of fourteen units (two years) such as force, energy, power, energy converters, transducers and radiation. Students who complete Applied Math I in the ninth grade can begin PT in the tenth grade with a high level of success. If time permits, a second year of PT may then be taken in the eleventh or twelfth grade. Principles of Technology is currently being taught in forty-eight states and two Canadian provinces to over one-hundred thousand students.

Applied Biology/Chemistry

Applied Biology/Chemistry is an integrated, two-year course of competency-based materials that can be infused into existing courses or taught as a stand-alone course. The ABC course presents biology and chemistry in the context of work, home, society, and the environment. The applied academic approach treats biology and chemistry as a unified science, just as the two subjects are most often found in real life experiences. The ABC curriculum consists of twelve units including Natural Resources, Nutrition, Plant Growth and Reproduction, Disease and Wellness and Microorganisms. ABC should be taught at the ninth and/or tenth grade level. Applied Biology/Chemistry, the newest of the Applied Academics courses, is being taught in thirty-eight states for the first time during the 1991-92 school year.

Applied Communications

Applied Communication is a comprehensive set of video-based learning materials designed to help students develop and refine job-related communications skills. The fifteen units in Applied Communication cover areas such as Communicating in the Work Place, Using Problem Solving Techniques, Participating in Groups, and Upgrading, Retraining, and Changing Jobs. Of the forty-six states now using Applied Communications, many are trying the one-year course at different grade levels, and some are infusing Applied Communications into English courses during all four high-school years.

All of the existing applied academics courses consist of student text with lab activities, video, a teacher's guide, a bank of test questions, and a resource guidebook. The applied academics courses are written generally at an eighth grade reading level.

Who Benefits From These Courses?

Everyone benefits when applied academic courses are carefully implemented and used as a foundation for a Tech Prep curriculum.

For students, applied academics builds a solid foundation of math, science, and communications principles while providing a broad knowledge base that ensures flexibility in a changing work force. Applied academics also make science, math, and communication courses more accessible and less threatening to a large majority of learners and may create a heightened interest in pursuing technical postsecondary study.

For educators, teaching applied math, science, and communications becomes a more successful and enjoyable experience that not only relates the academic principles to the practical world of business and industry, but bridges the gap between the vocational/technical and academic sides of the "house."

Applied academics benefit local employers by raising the level of mathematic, science, and communications skills for entering workers and providing a work force that can easily adapt to changes in that work place. Applied academics also provide opportunities for new and closer partnerships between education and industry.

CAREER CLUSTER MAPS

Career Cluster Maps are a recommended sequence of specific courses designed to build stronger foundations, provide opportunities for student choice and increase competency levels. Cluster Maps can be used as a counseling resource to guide students in career decision making as they prepare for the school-to-work transition.

Western Wisconsin Technical College

PURPOSES OF CAREER CLUSTER MAPS

- Demonstrates program scope and sequence
- Provides resource for career counseling
- Considers individual needs
- Assists in student career decision-making
- Identifies courses for possible articulation
- Illustrates university prep and tech prep similarities

Western Wisconsin Technical College

CUSTOMIZING YOUR CLUSTER MAPS

- Modify curricular requirements
- Substitute specific course titles
- Add/delete specific courses offered
- Adapt courses to appropriate grade level
- Advocate adoption of applied academics
- Highlight a specific program of study
- Identify articulated courses

Western Wisconsin Technical College

CAREER CLUSTER MAP ELEMENTS

- ★ WWTC Programs By Cluster
- ★ Career Options/Occupational Titles
- ★ WWTC Contact Person
- ★ WWTC Placement/Salary Data
- ★ Recommended/Required High School Courses
- ★ WWTC Course Sequence By Program
- ★ Info-Disc Reference

Western Wisconsin Technical College

WESTERN WISCONSIN TECHNICAL COLLEGE
304 North Sixth Street
La Crosse, WI 54602-0908

TECH PREP
WESTERN WISCONSIN

INDUSTRIAL TECHNOLOGIES

CONSTRUCTION

CAREER CLUSTER MAP (14)

TECH PREP STAFF:
Phone: (608) 785-9089

Jerry Redman, Ph.D.
Coordinator

Kerry Hogan
Curriculum Specialist

Ann Stansbury
Secretary

January 1993

WWTC PROGRAMS:

- Air-Conditioning
- Febrication Welding
- Refrigeration Servicing
- Welding
- Wood Technics

CAREER OPTIONS:

- Cabinetmaker
- Carpenter
- Estimator
- Fabricator
- HVAC Installer
- HVAC Technician
- Layout/Set-up Welder
- Maintenance Person
- Service Technician
- Steam Plant Operator
- Welder

FOR MORE INFORMATION PLEASE CALL:

Robert Pruse, Chair
Construction/Transportation Technology
(608) 785-9175

Ron Sellnau, Dean
Industrial Technologies
(608) 785-9246

WWTC PLACEMENT DATA:

Program	1988-1991 # Graduates	1988-1991 Graduates Employed	1988-1991 Graduates Employed in Area of Training	Graduates Responding to Placement Reports	1990-1991 Median Monthly Salary for Graduates
Air-Conditioning	32	30	29	30	$ 1429
Fabrication Welding	11	9	6	10	* $ 1189
Refrigeration Servicing	76	63	52	68	$ 1656
Welding	52	45	33	52	$ 1520
Wood Technics	54	50	45	52	$ 1202

* Salary based upon 1988-1989 data

RECOMMENDED HIGH SCHOOL COURSES FOR CONSTRUCTION CLUSTER

YEAR	ENGLISH	SCIENCE	MATH	SOCIAL SCIENCE	OTHER	[illegible]
12	English 4 and/or Applied Communications	Physics	Geometry			Basic Electricity Building Construction Entrepreneurship
11	English 3	Principles of Technology II (optional)	Algebra I	Government		Blueprint Reading General Metals/Sheet Metal Welding
10	English 2	Principles of Technology I	Applied Math II	Sociology	Physical Education	Introduction to Microcomputers Wood Technics Carpentry Drafting
9	English 1	Biology and/or Applied Biology/Chemistry	Applied Math I	History	Physical Education/Health	Keyboarding Introduction to Construction

▨ Number of years required in each academic area by the Department of Public Instruction

January 1993

CONSTRUCTION CAREER CLUSTER MAP

KEY:
Air Conditioning (AC) Associate Diploma - 70 Credits
Fabrication Welding (FW) Vocational Diploma - 30 Credits
Refrigeration Servicing (RS) Vocational Diploma - 41 Credits
Welding (W) Vocational Diploma - 31 Credits
Wood Technics (WT) Vocational Diploma - 39 Credits

01/93

TERM	ENGLISH	SCIENCE	MATH	SOCIAL SCIENCES	OCCUPATIONAL		
13 SPRING	Written Communications 801-195, 3 CR., (AC)	Applied Science II 402-323, 1 CR., (RS) Tech Science I 806-145, 2 CR., (AC) Tech Science II 806-146, 2 CR., (AC)		Work Relations 809-344, 1 CR., (FW) Occupational Relations 809-340, 1 CR., (WT)	Principles of Air Handling & Duct Design 601-120, 3 CR., (AC) Unitary A/C & Refrigeration Systems 601-123, 3 CR., (AC) Applied Electrical for HVAC/Ref 601-126, 3 CR., (AC) Arc Welding I 442-317, 6 CR., (FW) Blueprint Reading for Welding II 442-328, 2 CR., (FW)(W) Welding Fabrications 442-352, 2 CR., (FW)	Plant Safety for Welders 442-355, 1 CR., (FW) Industrial Work Experience 442-359, 3 CR., (FW) Electrical Circuits II 401-324, 1 CR., (RS) Refrigeration & Air Conditioning II 401-326, 4 CR., (RS) Intro to Refrigeration Troubleshooting 401-357, 2 CR., (RS) Coop in Work Force 401-358, 3 CR., (RS) Troubleshooting 401-359, 3 CR., (RS)	Arc Welding and Metal Fabrications 442-327, 9 CR., (W) Tungsten-Inert Gas Welding 442-329, 4 CR., (W) Blueprint Reading I 410-319, 1 CR., (WT) Funds of Building Construction II 410-325, 11 CR., (WT) Fasteners, Hardware & Materials of Industry II 410-326, 1 CR., (WT) Blueprint Reading II 410-329, 1 CR., (WT) Welding for Wood Technics 442-305, 1 CR., (WT)
13 FALL	Writing/Speaking Skills to Seek Employment 801-310, 1 CR., (FW)(W) Applied Communication Skills 801-330, 2 CR., (RS)	Applied Science I 401-313, 1 CR., (RS)	Industrial Math I 804-160, 3 CR., (AC) Industrial Math II 804-161, 3 CR., (AC) Introductory Computer Problems 804-170, 1 CR., (AC) Applied Math I - Industrial 804-310, 1 CR., (FW)(W)(WT) Applied Math II - Refrigeration 804-314, 1 CR., (RS) Applied Math II -Wood 804-316, 1 CR., (WT)		Principles of Energy & Heating 601-100, 4 CR., (AC) Load Calculations & Psychrometrics 601-104, 3 CR., (AC) Electricity, Motors & Controls for HVAC/R 601-106, 3 CR., (AC) Air Conditioning/Refrigeration Principles 601-109, 3 CR., (AC) Blueprint Reading for Welding I 442-308, 1 CR., (FW)(W) Oxy-Fuel Welding & Metals 442-311, 1 CR., (FW)(W)	Tungsten-Inert Gas Weld 442-329, 4 CR., (FW) Gas Metal and Flux Cored Arc Welding 442-348, 6 CR., (FW) Intro to Metal Fabrication 457-302, 1 CR., (FW) Commercial Refrigeration I 401-301, 4 CR., (RS) Commercial Refrigeration II 401-310, 4 CR., (RS) Electrical Circuits I 401-314, 1 CR., (RS) Refrigeration & AC I 401-316, 4 CR., (RS) Machine Shop 420-306, 1 CR., (W)	Mechanical Drawing 421-303, 1 CR., (W) Gas Metal Arc Welding 442-314, 4 CR., (W) Arc Welding I 442-317, 6 CR., (W) Architectural Drafting 403-302, 1 CR., (WT) Cabinet & Furniture Construction 409-310, 5 CR., (WT) Funds of Building Construction I 410-315, 5 CR., (WT) Fasteners, Hardware & Materials of Industry I 410-316, 1 CR., (WT) Mechanical Drawing 421-303, 1 CR., (WT)

CONSTRUCTION CAREER CLUSTER MAP

KEY:
Air Conditioning (AC) Associate Diploma - 70 Credits
Fabrication Welding (FW) Vocational Diploma - 30 Credits
Refrigeration Servicing (RS) Vocational Diploma - 41 Credits
Welding (W) Vocational Diploma - 31 Credits
Wood Technics (WT) Vocational Diploma - 39 Credits

01/93

TERM	ENGLISH	SCIENCE	MATH	SOCIAL SCIENCES	OCCUPATIONAL		ELECTIVE
14 SPRING	**Writing for Technologies & Business** 801-160, 3 CR., (AC)			**Psychology of Human Relations** 809-199, 3 CR., (AC)	**Commercial Systems** 601-140, 3 CR., (AC) **Controls for HVAC** 601-142, 3 CR., (AC) **Design of AC/Ref Systems** 601-145, 3 CR., (AC)		**Elective** 3 CR., (AC)
14 FALL	**Writing/Speaking Skills to Seek Employment** 801-110, 1 CR., (AC)			**Industrial Psychology** 809-182, 2 CR., (AC) **Economics** 809-195, 3 CR., (AC)	**Mechanical Systems Drawing & Interpretation** 601-135, 3 CR., (AC) **Hydronic & Steam Systems** 601-137, 4 CR., (AC)		**Elective** 3 CR., (AC)
Summer			**Applied Math I - Industrial** 804-310, 1 CR., (RS)		**Basic Electricity for Refrigeration** 401-300, 3 CR., (RS) **Basic Refrigeration** 401-302, 6 CR., (RS)	**Funamentals of Building Construction III** 410-335, 6 CR., (WT) **Fastteners, Hardware & Materials of Industry III** 410-336, 1 CR., (WT) **Estimating Bids & Specifications I** 410-338, 1 CR., (WT)	
Total Credits	(AC): 7 (FW): 1 (RS): 2 (W): 1 (WT): 0	(AC): 4 (FW): 0 (RS): 2 (W): 0 (WT): 0	(AC): 7 (FW): 1 (RS): 2 (W): 1 (WT): 2	(AC): 8 (FW): 1 (RS): 0 (W): 0 (WT): 1	(AC): 38 (FW): 27 (RS): 35 (W): 29 (WT): 36		(AC): 6 (FW): 0 (RS): 0 (W): 0 (WT): 0

WESTERN WISCONSIN TECHNICAL COLLEGE

Name: ______________________________ **School:** ______________________________

Cluster: ______________________________ **Date:** ______________________________

CAREER CLUSTER MAP

YEAR	ENGLISH	SCIENCE	MATH	SOCIAL SCIENCE	OTHER	[illegible] RELATED
12	▨					
11	▨			▨		
10	▨	▨	▨	▨	▨	
9	▨	▨	▨	▨	▨	

▨ Number of years required in each academic area by the Department of Public Instruction

What will be different?

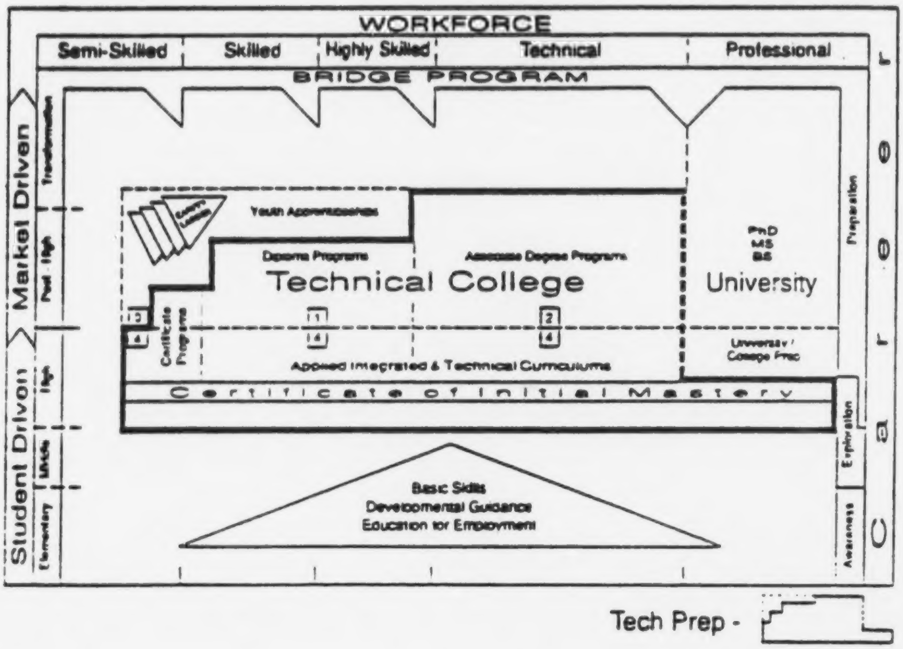
With Tech Prep, how will a student's educational experience be different from what most of us had in high school?

1. All courses will be taught in a manner that will help students see the relationship between what they learn and real life tasks.
2. Courses are designed to show how what is learned in one course relates to what is learned in another.
3. All students will have more contact with the work world prior to high school graduation through work experience, job shadowing or tryouts, or youth apprenticeship.
4. All students will develop personal portfolios which include postsecondary and pre-career goals and plans to achieve them as part of their tenth grade "gateway assessment."
5. Schools, employers, and community members will work together to help **all** students go on to technical colleges, four-year colleges or universities, apprenticeships or employment.

Western Wisconsin Technical College

western Wisconsin . . .

TECH PREP



in partnership with business/industry/labor, DPI & VTAE

Tech Prep Strategic Plan

Model Components:

- ***Philosophy and Goals***
- ***Tech Prep Model***
- ***Standard Definitions***
- ***Committee and Communication Structure***
- ***Policies and Procedures***
- ***Articulation and Contractual Agreements***
- ***Timeline***
- ***Understanding the Concept***

Curriculum Development:

- ***Resources and Activities***
- ***Applied Academics***
- ***Career Cluster Mapping***

Grant Activities:

TECH PREP
WESTERN WISCONSIN

TECH PREP

STRATEGIC PLAN

PHILOSOPHY AND GOALS

Tech Prep Philosophy

The purpose of the Tech Prep initiative is to make western Wisconsin more competitive in the world economy by developing and integrating more fully the academic and occupational skills of all segments of the student population. This purpose will be attained through the collaborative efforts of secondary schools, post-secondary institutions, community organizations/agencies and business/industry/labor. The Tech Prep initiative will provide individuals with the opportunity to master the enabling and functional skills they need to become productive workers, lifelong learners and participating citizens.

Tech Prep Goals

1. Ensure that students leave high school with the knowledge, skills and attitudes they need to succeed in a high skills, high wage economy and to participate fully as productive members of their community.

2. Provide an applied foundation in mathematics, natural and social sciences, communications and technology, teaching both the theory and application, through a competency based, highly structured, coordinated and sequential course of study.

3. Develop career clusters and provide technical literacy preparation in the fields of industrial technology, health and human services and business through a comprehensive course of study that integrates high level academic and vocational/technical courses.

4. Facilitate collaborative partnerships among secondary schools, post-secondary institutions, community organizations/agencies and business/industry/labor that will assist students as they make the school to work transition.

5. Promote Planning and Development Programs that will feature career awareness, career exploration and career preparation components for all K-12 students, including special populations and minorities, through the assistance of the Developmental Guidance Program and the Education For Employment Standard.

6. Create a model that offers various entrance and exit options for individuals to earn an associate degree, vocational diploma or vocational certificate in a specific technical field. This model should provide maximum flexibility and include career ladders, bridge programs, youth apprenticeships and linkages with other two and four-year colleges/universities.

7. Design a mechanism that provides for advanced standing and institutional credit options that will eliminate unnecessary duplication of instruction, provide opportunities for advanced training, increase flexibility in scheduling and promote more informed career decision-making.

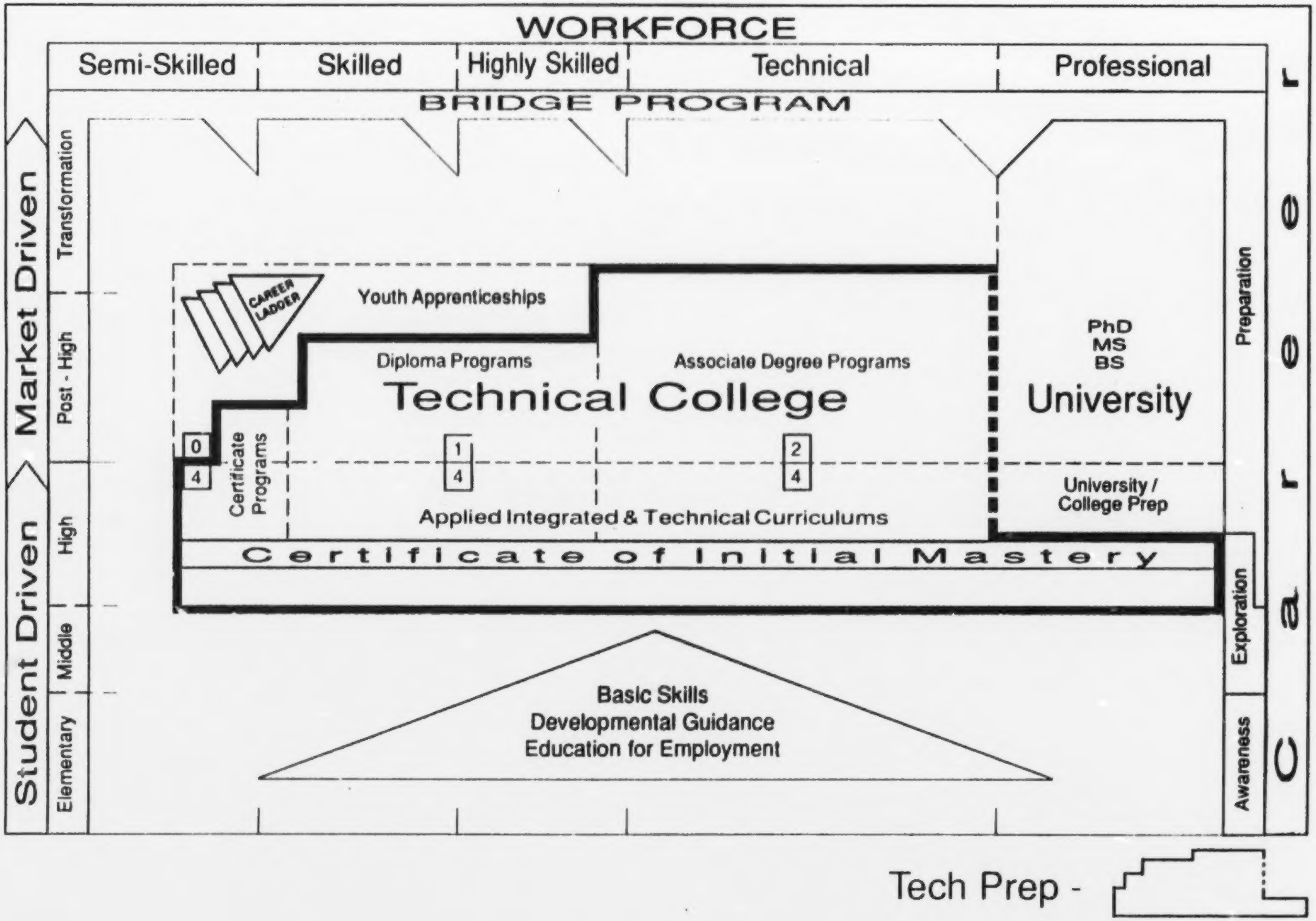
8. Plan and implement marketing strategies that will enhance the public's understanding, clarify their misconceptions and improve their perceptions of Tech Prep and technical careers.

TECH PREP

STRATEGIC PLAN

MODEL

TECH PREP MODEL



WORKFORCE

Semi-Skilled | Skilled | Highly Skilled | Technical | Professional

BRIDGE PROGRAM

Market Driven

Student Driven

Transformation

Post - High

High

Middle

Elementary

CAREER LADDER

Youth Apprenticeships

Diploma Programs

Associate Degree Programs

Technical College

Certificate Programs

0 4

1 4

2 4

Applied Integrated & Technical Curriculums

PhD
MS
BS

University

University / College Prep

Certificate of Initial Mastery

Basic Skills
Developmental Guidance
Education for Employment

Preparation

Exploration

Awareness

Career

Tech Prep -

TECH PREP

STRATEGIC PLAN

STANDARD DEFINITIONS

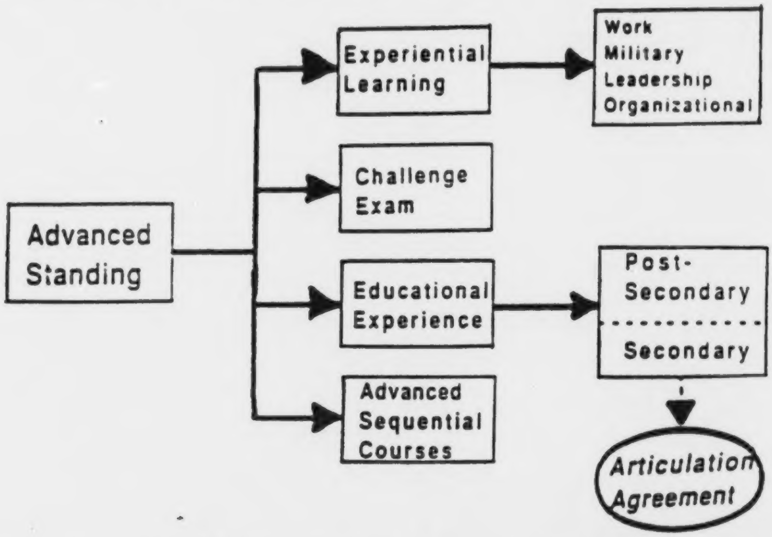
Tech Prep Definitions

***Advanced Placement*:** Programs that are time-shortened and eliminate unnecessary course redundancy. Advanced Placement is often granted when courses are waived at the post-secondary level.

Advanced Skills: Programs that are skill enhanced or contain advanced curriculum programs. Advanced Skill programs add more advanced training, eliminate course redundancy and graduates students with higher-level skills.

Advanced Standing: A process through which a student may be eligible to receive credit for all or part of a course due to competencies mastered previously. The determination of Advanced Standing is made by each technical college upon a student's enrollment in a program. Advanced Standing avoids unnecessary duplication of instruction and student learning. Advanced Standing may be granted through:

- validation of experiential learning (work, military, leadership or organizational);
- successfully passing the challenge examination;
- transfer credit by educational experience from another post-secondary institution;
- transfer credit from the secondary school under the terms of an articulation agreement;
- evaluation of advanced sequential course work.



Advanced Status Form: A WWTC application form that a student must complete in order to receive Advanced Standing credit, institutional credit or credit under post-secondary enrollment options.

Applied Academics: The presentation of subject matter in a way that integrates a particular academic discipline (such as mathematics, science or English) with personal work force applications (hands-on laboratories dealing with practical equipment and devices). They serve as the foundation for Tech Prep and are not "watered-down" courses. Applied academics is a coordinated, sequential curriculum designed to be rigorous and challenging while adhering to certain standards of development. The course material must be practical and relevant, related wherever possible to the real world of work. Curricular materials developed to date include:

- Principles of Technology (Applied Physics) - two years,
- Applied Mathematics - two years,
- Applied Communication - one year,
- Applied Biology/Chemistry - one year.

Articulation: A process for linking two or more educational systems within a community to help students make a smooth transition from one level to another without experiencing delays, duplication of courses, or loss of credit.

As a *process*, articulation is the coordination of policies and practices among sectors of the education system to produce a smooth flow of students from one sector to another. As an *attitude*, it is exemplified by the willingness of educators in all sectors to work together to transcend the individual and institutional self-interest that impedes the maximum development of the student. As a *goal*, it is the creation of an educational system without artificial divisions, so that the whole educational period becomes one unbroken flow, and which varies in speed for each individual.

Horizontal articulation generally refers to student transfer of credit from one program to another within an institution or from one institution to another at the same level. *Vertical articulation* refers to the transfer of credit from a lower-level insitution to a higher-level one.

Articulation Agreements: Written agreements between the local school system and the post-secondary institution that are signed early in the developmental stages of the Tech Prep. Articulation agreements allow a student the opportunity to receive Advanced Standing credit at the post-secondary level. In the Western Wisconsin Tech Prep model a series of three separate agreements need to be signed to receive college credit.

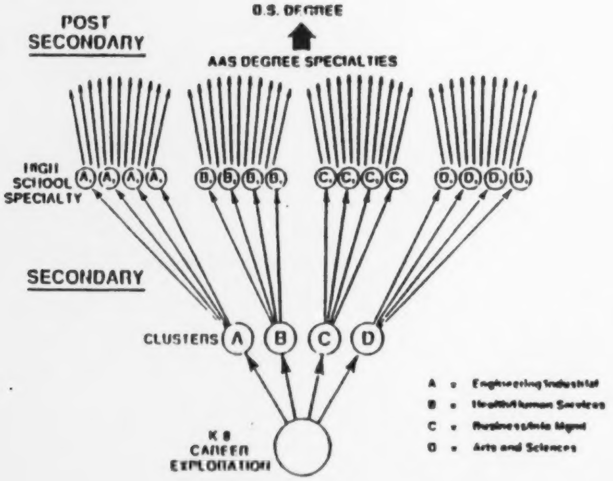
Associate Degree Programs: Programs developed to assist persons preparing for or advancing in an occupation. Curricula of Associate Degree Programs are designed by taking into consideration statewide competency requirements of a given business and/or industry. Programs range from 64 to 72 credits and contain credit requirements in four categories:

- occupational specific (minimum 32 credits)
- occupational supportive courses (minimum 11 credits)
- general education courses (minimum 15 credits)
- elective courses (minimum 6 credits)

Basic Skills: Refers to reading, language arts, mathematics, science and social studies concepts and skills.

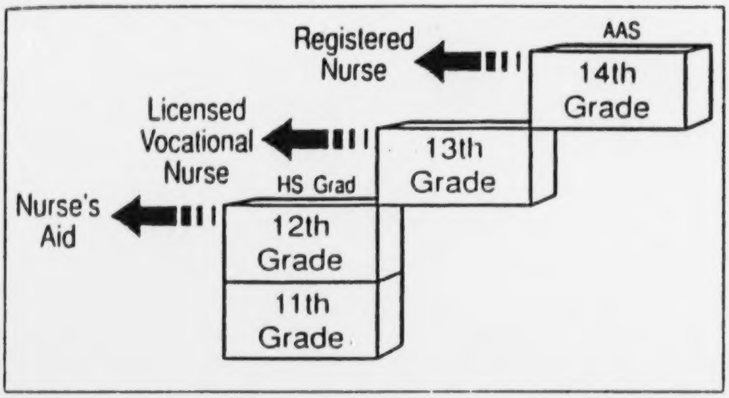
Bridge Program: A post-secondary programs that provides entering students who have not been in Tech Prep with the same academics and basic technology that have been taught to high school Tech Prep graduates.

Career Cluster: A Tech Prep curricular approach designed to build stronger foundations, provide opportunities for student choice and increase competency levels. This approach is based on the concept that many clusters of occupations require common skills and knowldege. It is possible, therefore, to design a curriculum that has a core of courses common to several related specialties. All students in the cluster take the core classes, approximately 80 percent of the curriculum and then branch out in specialty areas.



Career Decision-Making: A process in which a student learns about him/herself, the world of work and the relationship between the two. Career planning includes a *career awareness* for K-6, *career exploration* at the middle level, and *career preparation* beginning in grade eight and carried through grade 14.

Career Ladder: A curriculum that incorporates a series of exit/entry points, each of which leads to a specific but progressively higher job classification. Career ladders usually work best for skill-enhanced programs rather than time-shortened programs.



Certificate of Initial Mastery: A proposed certificate of achievement that will be awarded for successfully completing a proficiency examination after 10th grade.

Challenge Exam: A form of Advanced Standing in which a student may receive credit through examination by challenging courses through formal testing procedures which have been approved by the division offering the course. A fee will be assessed for each challenge examination attempted. If a student successfully passes the examination, the grade of "CR*" (credit) will be recorded on the student's transcript. The challenge exam may consist of written, oral, performance or practical test, interview, or any combination of the above.

Competency Based Education: An organizational structure for learning/teaching which requires description in advance of the knowledge, skills and attitudes that a student must possess upon exit from a program or course. Competency based curricula clearly identify expected outcomes, organize instruction based upon performance standards, and evaluate student performance upon mastery of competencies.

Contract: A written agreement that is signed by the secondary and post-secondary institution.

Core Abilities: The transferable skills essential to an individual's success regardless of occupation or community setting. These skills are regularly indentified by employers, employees, and educators as essentials to lifelong learning.

- work productively
- think critically and creatively
- act responsibly
- communicate clearly
- learn effectively
- value self positively
- work cooperatively

DACUM: Refers to an acronym for Developing A CurriculuUM or Designing A CurriculUM, and is a process that analyzes an occupation systematically. The analysis is performed by a panel of experts from the occupation under consideration. Using a modified brainstorming method, these experts participate in a one or two-day workshop under the direction of a qualified facilitator. The workshop produces a DACUM chart which graphically describes an occupation in terms of specific tasks that workers must perform.

Developmental Guidance: A systematic preventive program that meets the personal/social, career and educational needs of students with age appropriate skills and knowledge through classroom instruction, group interaction, and individualized counseling. Provided by counselors, teachers, parents, community and business and industry personnel, this program often results in pupils attaining positive attitudes about self, society, family, learning and careers.

Education for Employment Standard: *Standard m* requires all school districts to provide all students, throught their education, access to classes and programs designed to prepare them for employment. In response to the mandate from business and industry and based on Parker Project findings, DPI has developed the concept of education for employment. It is designed to provide each student with both the skills nededed for productive entry into the work force and the academic knowledge neede for further education and training. Education for Employment refocuses the mission of public elementary and secondary education by recognizing the key role education plays in economic development. This necessitates changes in how the state's education system approaches its task.

Elective Courses: Program courses at or above the associate degree level which are determined by the student and are within the goals and objectives of the occupational program and in accordance with the established policy of the district.

Enabling and Functioning Skills: The five competencies and three-part foundational skills and personal qualities that lie at the heart of job-performance. The five competencies are:

- resources (identifies, organizes, plans, and allocates resources).
- interpersonal (works with others).
- information (acquires and uses information).
- systems (understands complex inter-relationships).
- technology (works with a variety of technologies).

Work involves a complex interplay among the five competencies and the three elements of the foundation:

- the basic skills,
- higher-order thinking skills, and
- diligent application of personal qualities.

Experiential Learning: A form of Advanced Standing granted to an incoming student on the basis of proficiency gained through maturity, work, or work accomplished elsewhere at other levels including military experience and/or organizational leadership. The student's application will be evaluated by the registrar and the appropriate division chairperson, who will determine if college credit is to be granted for this experience.

Gateway Assessment: A planned tenth-grade assessment of core competencies that will be: multidisciplinary (such as reading, writing, computation and scientific literacy); performance-based (including problem-solving, analytical skills and critical reasoning skills); and based on parent involvement.

General Education Courses: Program courses which relate to the effective functioning of the individual in both occupational and community settings. These courses shall be drawn from communicative skills, behavioral and social sciences with a minimum of three semester credits in each of these areas.

Institutional Credit Offerings: A method of meeting the VTAE mission of contracting with secondary schools to provide services for high school age students. An institutional credit offering is technical college course offered to students enrolled in a high school which grants credit toward graduation from high school and a VTAE approved program. It results in a VTAE district transcripted and will be used to calculate the student's grade point average. VTAE requirements for offering a course for institutional credit are that:

- the course is approved by the State Board.
- the course is required in an approved occupational program.
- the course is taught by an instructor who has appropriate DPI and VTAE certification.
- no less than the current program and material fees are collected by the district.
- the course is recorded on a VTAE transcript.

Integration: The act or process of blending or forming a whole. In Tech Prep, applied and technical curriculums are integrated into a single curriculum.

Internship: Refers to post-secondary work-based learning in which a partnership is established between the technical college, an employer or business, and the student for the purpose of providing practical education to the student through productive work opportunities. A signed agreement between all parties outlining a student's cooperative learning plan is a necessary component of an internship.

Neglected Majority: The high school audience that tech prep is designed for that often involves the "middle 50%" of the students. These students learn by seeing applications of concepts and through concrete experiences.

Occupational Specific Courses: Program courses which contain instruction directly related to a specific occupational supportive area or combinations there of.

Occupational Supportive Courses: Program courses which support and/or form the foundaiton for the occupational content of the program. These courses will be drawn from natual science, mathematics, social and behavioral science, communicative skills, and other disciplines. Courses which are occupational specific in one program may be occupational supportive in another.

Post-Secondary Enrollment Options: A program in which any 11th or 12th grade pupil enrolled in a public school would be allowed to attend a Wisconsin institution of higher education for the purpose of taking one or more curses beginning in the 1992-93 school year. Students may take courses for high school credit and/or for post-secondary credit.

School-to-Work Transition: The department of public instruction's initiative that strives to ensure that today's young people become the workers the United States needs for the 21st century. The initiative recognized that most jobs over the next 15 to 20 years will occur in occupations requiring some post-secondary education, but less than a baccalaureate degree. Components of the school-to-work initiative include:

- gateway assessment
- tech prep
- youth apprenticeship
- post-secondary options
- child labor laws
- advanced placement

Tech Prep: Wisconsin's definition of Tech Prep is cooperation between K-12 schools, technical colleges, universities and the business labor community to develop applied integrated academic and technical curriculums which provide a coherent sequence of courses and experiences designed to provide high school graduates with a more technically oriented background leading toward the goal of successful transition from school to post-secondary technical education and/or to work.

Youth Apprenticeship: This program is one part of a broader effort to improve the transition from high school to work, a registered apprenticeship, and/or where appropriate to two or four year colleges. Youth apprenticeship is explicitly intended to link high school students with business and industry through an integrated education and work-based learning program leading to a statewide credential of proficiency.

Vocational Certificate. A certificate that may be awarded at the option of the local districts for participation and/or attendance at VTAE adult/continuing education courses(s), groups of courses or attainment of specific competencies. Most programs require the completion of nine to twelve credits of advanced technical occupational content.

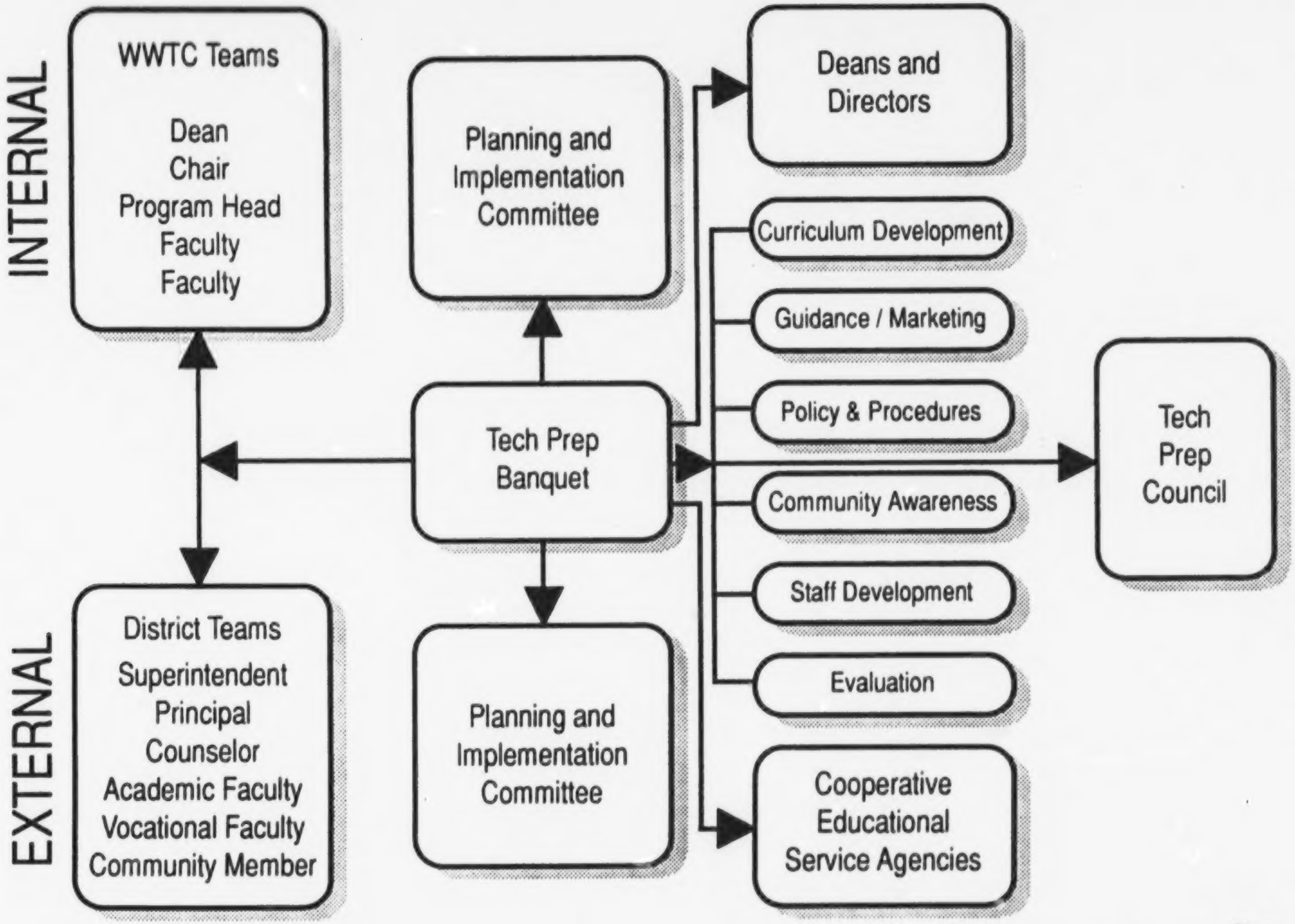
Vocational Diploma Programs: Programs based on local needs of business and industry that are designated to assist persons preparing for, remaining or advancing in an occupation. Vocational Diploma Programs have a minimum of two vocational credits and a maximum of 70 vocational credits. Seventy percent of the total program credits shall be in courses that are occupational specific.

TECH PREP

STRATEGIC PLAN

COMMITTEE AND COMMUNICATION STRUCTURE

TECH PREP COMMUNICATION / COMMITTEE STRUCTURE



INTERNAL

WWTC Teams

Dean
Chair
Program Head
Faculty
Faculty

Planning and Implementation Committee

Tech Prep Banquet

EXTERNAL

District Teams
Superintendent
Principal
Counselor
Academic Faculty
Vocational Faculty
Community Member

Planning and Implementation Committee

Deans and Directors

Curriculum Development

Guidance / Marketing

Policy & Procedures

Community Awareness

Staff Development

Evaluation

Cooperative Educational Service Agencies

Tech Prep Council

Committee and Communication Structure

The **Committee and Communication** Structure in western Wisconsin is designed to provide a network through which a variety of constituencies receive the latest information on the Tech Prep initiative. Valuable input is solicited from each group within the service district area concerning the development of Western's tech prep strategic plan and model components. We feel this multilevel approach has developed ownership and facilitated trust among each target audience. In particular, top-level management personnel (i.e., Deans and Directors from Western Wisconsin Technical College and High School Superintendents through CESA) have given their support and guidance to make the Tech Prep initiative a success.

Western's Tech Prep strategic plan contains the following components:

a. Concept/Philosophy/Goals;
b. Standard Definitions;
c. Three Prototype Articulation Agreements;
d. Committee/Communication Structure;
e. Contract Agreements;
f. Policy and Procedures;
g. Time Line;
h. Physical Model.

Tech Prep is people talking to people! The Committee and Communication structure includes the following committees, merbership, and charges:

Tech Prep Council

Membership: College administration (president, vice-president instruction, curriculum specialist, dean, extended campus supervisor); High school administration (superintendents, principals and a CESA representatives); College and high school faculty in both the academic and technical areas; and Business representatives.

Charge: Develop a comprehensive regional plan for tech prep, coordinate the submission of grants for tech prep funds, review the progress of tech prep activities and serve as the governing body.

Planning and Implementation

Membership: Originally this committee was two separate committees, one external and one internal, that merged to become a single Planning and Implementation committee. Tech prep is a high school program and Western felt that high school representatives should have initial ownership in model development. On the other hand, curriculum development and articulation are the responsibilities of college administration and faculty. In order to operationalize these beliefs, two separate committees were necessitated early on in the development of the Tech Prep strategic plan.

Internal-Department chairs/faculty from each division, extended campus supervisors, and a counselor; External-LVECs, principals, curriculum coordinators, and vocational faculty, CESA representatives. (NOTE: Each high school consortium under Carl Perkins funding was represented.)

Charge: Develop and implement Tech Prep strategic plan; complete Tech Prep grant activities; coordinate curriculum development; facilitate the articulation process; promote applied academics; foster career preparation; and plan a marketing campaign for Tech Prep.

Team Concept

At the grass roots level, high school and college teams will join together in the kickoff banquet to discuss the Tech Prep strategic plan and model. High school teams will consist of five or six members representing administration, counseling, vocational educators, academic educators, and a private sector person (Education for Employment Council member, school board representative, local business person, etc.). College teams will be assembled by divisions and have representatives from administration such as department chairs and program heads, faculty, extended campus personnel and support services staff. Representatives from each team will be given the opportunity to address each strategic plan component in a small group seminar. Break out sessions are planned to address the topics of curriculum development, evaluation, guidance/marketing, policy and procedures, community awareness and staff development.

WESTERN WISCONSIN TECHNICAL COLLEGE
304 North Sixth Street
La Crosse, WI 54602-0908

TECH PREP COUNCIL MEMBERS

WWTC ADMINISTRATIVE STAFF

Lee Rasch - President/Director
Jerry Redman - Curriculum Specialist
Kerry F. Hogan - Tech Prep Specialist
John Murphy - Dean, Economic Development and Extended Education
Bob Franks - Dean, Business Division
Shirley Preuss - Chair, Wisconsin Council on Vocational Education
Ron Sellnau - Dean, Industrial Technologies
Jane Travis - Dean, Human Services Division
George Findlen - Dean, General Education

PUBLIC SCHOOL ADMINISTRATIVE STAFF

Bob Peterson - Director, CESA #4
Pamela Hilleshiem-Setz, Vocational Director, CESA #5
Jerry Freimark - Superintendent, Whitehall School District
Jerry Trochinski - Principal, West Salem High School
Dick Swantz - Superintendent, La Crosse School District
Dennis Richards - Superintendent, Black River Falls School District
Bob Hubert - Superintendent, Mauston School District
James Waller - Superintendent, Viroqua School District

COLLEGE ADMINISTRATIVE STAFF

Julius Erlenbach, Vice Chancellor, UW-La Crosse
John Knight, Academic Vice President, Viterbo College

BUSINESS REPRESENTATIVES

Linda Kastantin - Manager, Dairyland Power Cooperative
George Snapp - Vice President, ALTEC International Inc.
Howard Darmer - General Manager, Union Camp
Minnetta Huxhahl - Director of Programs/Events, La Crosse Chamber of Commerce
Jerry Hanoski - Executive Director, Private Industry Council
Peter Bentz - President, Dura-Tech, Inc
Harold Craig - Chairman, C&C Machines

WWTC INSTRUCTIONAL STAFF

Linda Schwandt - General Education
Bob Maas - Industrial Technologies Division

PUBLIC SCHOOL INSTRUCTIONAL STAFF

Beverly Donahue - Sparta School District
Annette O'Hern - La Crosse School District

High School Tech Prep Consortiums
1992-1993

1. Consortium: Arcadia, Alma Center (Lincoln), Blair-Taylor, Independence, Whitehall
Fiscal Agent: Whitehall
Representative: Del Boley

2. Consortium: Viroqua, Westby, West Salem
Fiscal Agent: Viroqua
Representative: Robert Greene and Clarice Nestingen

3. Consortium: Holmen, Onalaska
Fiscal Agent: Holmen
Representative: Paul Neman

4. Consortium. Black River Falls, Tomah
Fiscal Agent: Tomah
Representative: Lois Corey

5. Consortium: Sparta
Fiscal Agent: Sparta
Representative: Leroy Raddatz

6. Consortium: La Crosse Schools (Logan and Central)
Fiscal Agent: La Crosse Schools
Representative: Jerry Berns

7. Consortium: Elroy-Kendall-Wilton (Royall), Hillsboro, Necedah, New Lisbon, Mauston, Wonewoc
Fiscal Agent: CESA 5
Representative: Joanne Casey

8. Consortium: Bangor, Norwalk-Ontario (Brookwood), Cashton, Cochrane-Fountain City, De Soto, Galesville-Ettrick-Trempealeau, La Farge, Melrose-Mindoro
Fiscal Agent: CESA 4
Representative: Barbara Whyte and Mary Heath

11-03-92

WESTERN WISCONSIN TECHNICAL COLLEGE
304 North Sixth Street
La Crosse, WI 54602-0908

TECH PREP PLANNING AND IMPLEMENTATION COMMITTEE
1992-1993

Jerry Berns
Supervisor of
Applied Studies
Hogan Administrative Center
807 East Avenue South
La Crosse, WI 54601
(608) 789-7667

Diane Birnbaum
Operations Manager
Western Wisconsin PIC Inc.
402 North 8th Street
La Crosse, WI 54602
(608) 785-9936

Del Boley
Trempealeau Co-op,·LVEC
Whitehall High School
2405 Hobson
Whitehall, WI 54773
(715) 538-2341

Joanne Casey
Tech Prep Coordinator
CESA #5
518 Elm Street
Mauston, WI 53948
(608) 847-5333 (home)
(608) 742-8811 (work)

Lois Corey
Curriculum Coordinator
District Office
301 North 4th Street
Black River Falls, WI 54615
(715) 284-4357

Anita Dahlby
Counselor
Onalaska High School
700 Hilltopper Place
Onalaska, WI 54650
(608) 783-4561

Jerry Freimark
Superintendent
Whitehall School District
2405 Hobson Street
Whitehall, WI 54773
(715) 538-4734

Robert Greene
Vocational Teacher
Viroqua High School
Viroqua, WI 54665
(608) 637-3191

Mary Heath
Instructor
DeSoto High School
P.O.Box 7
DeSoto, WI 54624
(608) 648-3620

Kerry F. Hogan
Tech Prep Specialist
WWTC
304 North 6th Street
La Crosse, WI 54602-0908
(608) 785-9248

Leroy Raddatz
Vocational Teacher, LVEC
Tomah High School
901 Lincoln Avenue
Tomah, WI 54660
(608) 372-5986

Paul Neman
Principal
Onalaska High School
700 Hilltopper Place
Onalaska, WI 54650
(608) 783-4561

Clarice Nestingen
Curriculum Director
Westby High School
206 West Avenue South
Westby, WI 54667
(608) 634-3003

Jerry Redman
Curriculum Director
WWTC
304 North 6th Street
La Crosse, WI 54602
(608) 785-9089

Nancy Sorenson
Dean, College of Education
UW-La Crosse
102B Morris Hall
La Crosse, WI 54601
(608) 785-8659

Barbara Whyte
Principal
La Farge High School
La Farge, WI 54639
(608) 625-2400

10/92
REV 11/92

WESTERN WISCONSIN TECHNICAL COLLEGE
304 North Sixth Street
La Crosse, WI 54602-0908

Internal Tech Prep Planning and Implementation Committee
1992-1993

Robert Andraschko
Industrial Technologies Division
C-109
Phone: 9131

Mary Ann Ekern
Human Services Division
K-402
Phone: 9234

David Fish
Student Support Services
C-129
Phone: 9487

Rich Georgeson
Tomah Campus Supervisor
Phone: 9414

John Grass
General Education/Educational Services Division

Al Hanson
Viroqua Campus Supervisor
Phone: 9830

Kerry F. Hogan
Tech Prep Specialist
C-209L
Phone: 9089

Sabra Ann Mumford
Business Division/Home Economics Program
K-203
Phone: 9267

Todd Munson
General Education/Educational Services Division
C-220
Phone: 9165

Liz Pedersen
Mauston Campus Supervisor
Phone: 9415

Jerry Redman
Director of Curriculum/Tech Prep Coordinator
C-209P
Phone: 9089

Diane Rud
Student Support Services
C-129
Phone: 9567

Joan Sosalla
BRF and Independence Campus Supervisor
Phone: 9416

Dan Wilson
Business Division
B-107
Phone: 9242

MARKETING PLAN

- ***Developing a Tech Prep Logo***
- ***Hosting an Annual Tech Prep Banquet***
- ***Disseminating Western's Tech Prep Strategic Plan***
- ***Participating in Tech Prep Inservice Activities***
- ***Providing Tech Prep Presentation Packets***
- ***Fostering District Strategic Planning Using the Affinity Process***
- ***Promoting Wisconsin' Video: "Learning, Earning and Living"***
- ***Sponsoring Informal Socials, Faculty Exchanges and On-Site Tours***
- ***Implementing the Articulation Process***
- ***Distributing 15,000 Tech Prep Brochures***
- ***Utilizing Western's 18 Career Cluster Maps to Foster Career Decision-Making***
- ***Publishing Semi-Annual Tech Prep Newsletters***
- ***Submitting Articles to Local Newspapers***

Tech Prep Kick-Off Banquet

Monday, April 27, 1992
Radisson Hotel, La Crosse, Wisconsin

The theme of this year's banquet, ***Getting To Know Tech Prep,*** *features western Wisconsin's Tech Prep strategic plan. Our objective is to assist local high schools in creating and implementing Tech Prep.*

Tentative Agenda

4:30 - 5:15 **Registration/Social Hour**

5:15 - 5:30 **Welcome**
Mr. Jerry Friemark, Superintendent, Whitehall
Dr. Lee Rasch, President, WWTC

5:30 - 6:30 **Dinner**

6:30 - 7:00 **Keynote Address--Experiencing Tomorrow Today: TECH PREP**
Mr. Mike Tokheim, State Tech Prep Consultant
Wisconsin Board of Vocational, Technical and Adult Education

7:00 - 7:20 **Tech Prep Strategic Plan and Model**
Mr. John Murphy, Vice President, WWTC
Dr. Jerry Redman, Curriculum Specialist/Tech Prep Coordinator, WWTC

7:20 - 7:30 **Break**

7:30 - 8:30 **Break-Out Sessions**

- Green Group -- Curriculum Development — Minnesota B
  Moderators: Clarice Nestingen and Joanne Casey
- Blue Group -- Policy and Procedures
  Moderators: Bob Greene and Leroy Raddatz — Banquet Room
- Red Group -- Staff Development
  Moderators: John Murphy, Jerry Redman & Bob Moen — Banquet Room
- Yellow Group -- Guidance/Marketing
  Moderators: Paul Neman and Delesa Boley — Iowa Room
- Orange Group -- Community Awareness
  Moderators: Dennis Cairns and Barbara Whyte — Minnesota A
- All Groups -- Evaluation

8:30 - 9:00 **Completion of Evaluation Form**
Upcoming Events/Timeline
Questions/Answers
Closing Remarks

TECH PREP
Program and Banquet
April 27, 1992
Radisson Hotel, La Crosse, Wisconsin

A. Please respond to items 1-7 by circling the appropriate number. Please write additional comments where appropriate.

	Strongly Agree		Neutral		Strongly Disagree
1. I have a better understanding of Tech Prep. Comments:	5	4	3	2	1
2. I have a better understanding of the Tech Prep Model and strategic plan which was presented. Comments:	5	4	3	2	1
3. I understand the state's perspective on Tech Prep. Comments:	5	4	3	2	1
4. The small group seminars increased my understanding of Tech Prep. Comments:	5	4	3	2	1
5. I have a better understanding of my role in Tech Prep. Comments:	5	4	3	2	1
6. I can see the future direction of WWTC and Tech Prep. Comments:	5	4	3	2	1
7. I liked the program format, facilities and dinner. Comments:	5	4	3	2	1

B. Please circle:

8. Place of employment:
High School WWTC Other *(specify)* ______________________.

9. My position:
administrator counselor private sector representative
academic faculty vocational faculty Other *(specify)*______________________.

C. Please answer the following:

10. What I liked best tonight was ______________________________

____.

11. If I could have changed one thing tonight it would have been ______________________

____.

12. Additional information that I would like would be ______________________________

____.

TECH PREP

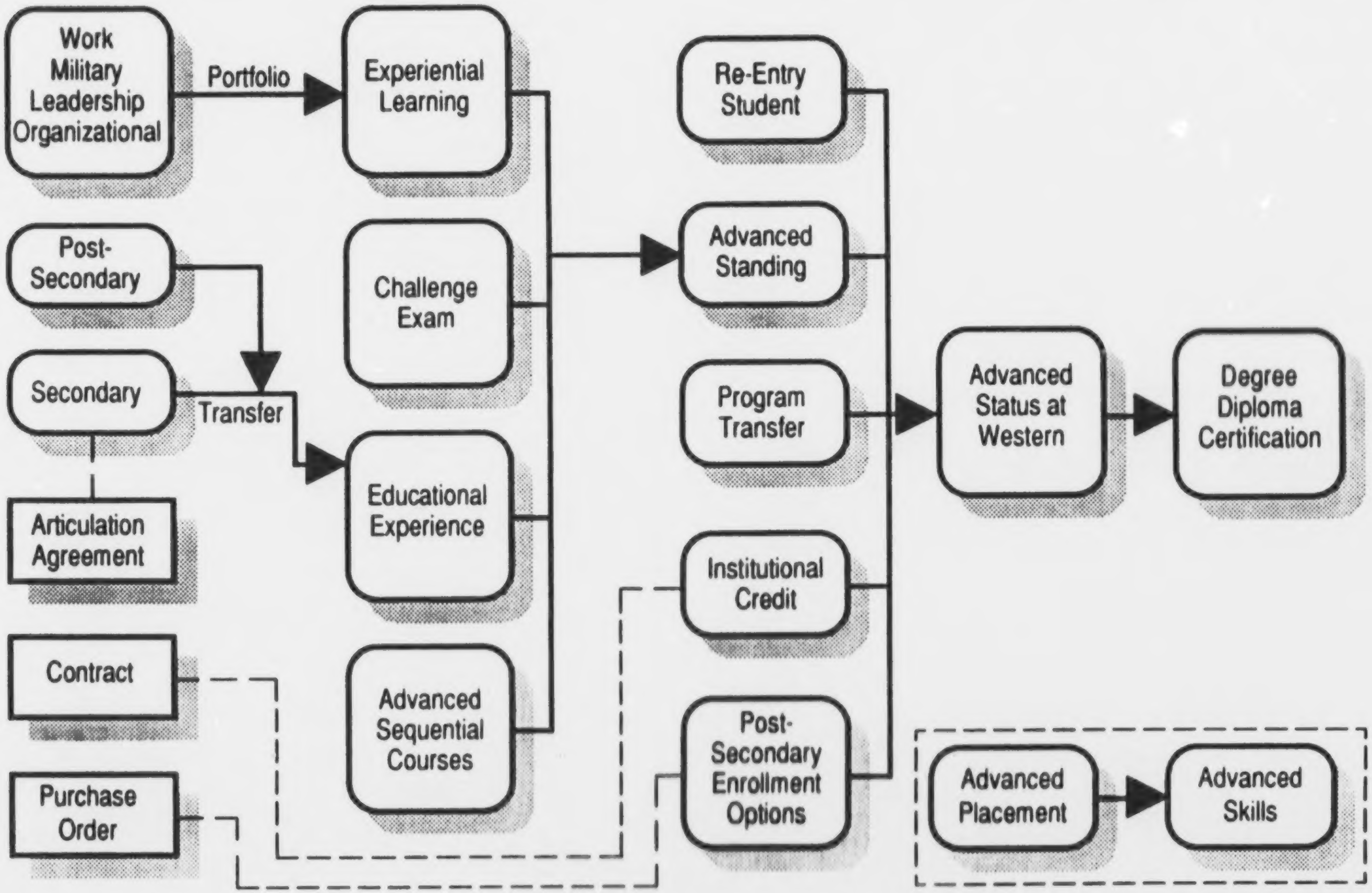
STRATEGIC PLAN

POLICIES AND PROCEDURES

HIGH SCHOOL - WWTC ARTICULATION

External Mechanisms

Internal Mechanisms



Work Military Leadership Organizational

Portfolio

Experiential Learning

Post-Secondary

Secondary

Transfer

Articulation Agreement

Challenge Exam

Educational Experience

Contract

Purchase Order

Advanced Sequential Courses

Re-Entry Student

Advanced Standing

Program Transfer

Institutional Credit

Post-Secondary Enrollment Options

Advanced Status at Western

Degree Diploma Certification

Advanced Placement

Advanced Skills

A COMPARISON OF ADVANCED STANDING, INSTITUTIONAL CREDIT & POST-SECONDARY OPTIONS

Question	**Advanced Standing**	**Institutional Credit**	**Post-Secondary Enrollment Options**
Course Offering Requirements?	Must be matching or equivalent course competencies	Must be approved course in an approved occupational program	Must be approved course in an approved occupational program
Instructor Certification?	Must be DPI certified	Both DPI and VTAE certified	Must be VTAE certified
Fees Assessed?	No tuition or material fees are assessed	Tuition and material fees are assessed	Tuition and material fees are assessed
Pay Application Fee?	Yes, if program declared	Yes, if program declared	Yes, if program declared
Who Receives FTE?	High School	High School andWWTC	WWTC
How Transcripted at WWTC?	CR credit	Letter Grade	Letter Grade
How Transcripted at H.S.?	Letter Grade	Letter Grade	Probably CR credit
Count in WWTC GPA?	No	Yes	Yes
Transferability to Another Post-Secondary Institution?	Unlikely	Possibly	Possibly
Is Concept Stable by Division, Program, Etc.?	Yes, if appropriate	Yes, if appropriate	Yes, if appropriate
Advance Toward Graduation?	Yes, reduces credit number for graduation while in residence	Yes, reduces credit number for graduation while in residence	Yes, reduces credit number for graduation while in residence
WWTC Mechanism?	Articulation Agreement	Contract	Purchase Order or PSEO Form
Advanced Status Form Required?	Yes, must complete	Yes, must complete	Yes, must complete

How does Tech Prep Work?

Policies and procedures have been established to plan, develop and implement the Tech Prep initiative in western Wisconsin. The procedures are as follows:

1. Contact Jerry Redman or Kerry Hogan, the Tech Prep Coordinators at Western Wisconsin Technical College, to learn more about the Tech Prep initiative. Their address is Western Wisconsin Technical College, 304 North 6th Street, 121 Coleman, La Crosse, Wisconsin 54602-0908 or telephone (608) 785-9089.

2. An initial meeting between the administrative staffs of both institutions is held to discuss the concept of Tech Prep, the strategic plan and articulation alternatives.

3. The Executive Articulation Agreement is signed by the Superintendent and Board President of the participating high school and the President and Board Chair of WWTC. By signing this agreement both parties agree to support the appropriate commitment of staff to assist in the development and implementation of articulated curricula for the Tech Prep initiative.

4. Under the terms of the Executive Articulation Agreement, the high school will designate a liaison person whose responsibility will be to establish the procedures necessary to develop and implement a mechanism by which vocational/technical education programs at the secondary and post-secondary levels will interface.

5. A second meeting(s) between the public school and WWTC administrators and/or faculties is conducted to determine where articulation might be possible and what the most appropriate articulation mechanism is. As deemed appropriate, either the Curricular Articulation Agreement or Contractual Agreement is signed identifying specific clauses and/or responsibilities for each participant.

If the Articulation Agreement option is chosen complete steps 6-10.

6. Faculty members from both institutions select specific courses, and instructors are chosen to coordinate the curriculum and implement the program. The mutualy agreed-upon task competencies for each articulated course are developed and attached to the Curricular Articulation Agreement.

7. After the articulated course has been completed the Student Articulation Agreement is signed by the appropriate parties.

8. The student applies for admission at Western Wisconsin Technical College through the regular admission procedures, which includes completing a Request For Advanced Status Form.

9. Upon request by the student the secondary school will forward an official transcipt and a copy of the Certificate of Mastery to WWTC .

10. Students who have applied, been accepted and are enrolled will be granted advanced standing credit(s) by WWTC for articulated competencies. Upon issuance of advanced standing credit(s), the student will receive credit(s) toward the appropriate associate degree, vocational diploma or vocational certificate program and the credit(s) will appear on the WWTC transcript by course title and credit hour.

How does PSEO Work?

ADMISSION PROCEDURES FOR STUDENTS:

1. Call Diane Rud, Admissions Manager WWTC, (608) 785-9567. Tell her what type of course work you are interested in and she will refer you to a counselor who has expertise in the area of your interests. Plan to schedule a telephone interview with this counselor or come in to meet with the counselor in person.

2. After you have talked with the WWTC counselor, fill out Part A of the WWTC Post Secondary Enrollment Options (PSEO) Application Form. It is advisable to indicate one or more alternate courses in the event that your first choice course is filled.

3. Submit the WWTC PSEO application to the local school board for approval prior to February 1 for summer school, March 1 for the fall semester, and October 1 for the spring semester.

4. WWTC will send a letter indicating applicant status after an application has been received. Students should notify the school board after an acceptance letter has been received.

5. Students accepted to the college will receive a letter with registration information approximately three weeks prior to registration.

6. Notify the school board of the courses enrolled in immediately following registration.

PROCEDURES FOR THE HIGH SCHOOL:

1. Review the WWTC Post Secondary Enrollment Options Program Information Sheet.

2. Complete Section B of the WWTC PSEO Application Form.

3. Send the PSEO Application Form to the WWTC Admissions Office, 304 North Sixth Street, La Crosse, WI 54602.

Send by May 15 for the fall semester, December 15 for the spring semester and March 15 for the summer session.

4. Notify the student of approval status.

COMPARISON OF ADVANCED STANDING, PSEO & INSTITUTIONAL CREDIT

MECHANISM **WWTC** **HIGH SCHOOL**

Advanced Standing Credit

Articulation Agreement ? <---------------- * (Equivalent Competencies)

Post-Secondary Enrollment Options

PSEO Form & Purchase Order * (Approved Course) ----------------> ?

Institutional Credit

Contract ? <----------------*----------------> ?
(Approved Course)

NOTE: * refers to articulated course.

ARTICULATION AGREEMENTS

A. Executive
- Defines Tech Prep and Articulation
- Solicits commitment of CEOs
- Identifies high school liaison

B. Curricular
- Provides details of articulation procedure
- Identifies responsibilities by WWTC, high school, student and general categories
- Customizes agreement through 45 provisions to fit individual needs
- Identifies agreed-upon task competencies for articulated courses

C. Student
- Informs student and parents of articulation procedure
- Rewards student with Certificate of Mastery

TECH PREP

STRATEGIC PLAN

ARTICULATION AND CONTRACTUAL AGREEMENTS

Executive Articulation Agreement

between

Western Wisconsin Technical College

and

____

What is the Tech Prep Initiative?

Tech Prep is a partnership formed among secondary schools, area business/industry/labor, community leaders, parents, students and Western Wisconsin Technical College. The primary goal of the Tech Prep initiative is to ensure that students leave high school with the knowledge, skills, and attitudes they need to succeed in a high skills, high wage economy and to participate fully as productive members of their community. In essence, Tech Prep creates a better environment for earning, learning and living!

Tech Prep is a comprehensive course of study -- a coherent and integrated set of courses, activities and experiences. It is designed to meet the needs for high school graduates to have a more technically oriented educational background through the balancing of high level academic courses and vocational/technical courses. Student participants in Tech Prep can earn an associate degree, vocational diploma, or vocational certificate in a specific technical field.

Participants in Tech Prep make the successful transition from high school to post-secondary technical education to work. Through the jointly developed competency, outcome based curricula students benefit from increased occupational options, enhanced instructional relevance, and expanded competency attainment.

What is Articulation?

Articulation is an agreement between public schools and post-secondary institutions which may allow a student to receive credit for instruction received while attending public schools. By linking the two systems together students make a smooth transition from one level to the next without experiencing delays, duplication of courses, or loss of credit. Tech Prep articulation makes sense when programs are coordinated to eliminate unnecessary duplication of instruction, provide opportunities for advanced training, increase flexibility in scheduling and promote more informed career decision-making.

What is the Purpose of this Agreement?

The purpose of this Articulation Agreement is to facilitate cooperative vocational/technical education programming by participating high schools and Western Wisconsin Technical College (WWTC). Under the terms of this agreement, students may be awarded credit by the high school and by WWTC. Both parties agree to develop and implement a mechanism by which vocational/technical education programs at the secondary and post-secondary levels will interface, thereby granting students who have mastered agreed-upon task competencies at the secondary level college credit for similar task competencies in vocational/technical programs at Western Wisconsin Technical College.

Articles of Agreement

1. The institutions listed below are committed to developing and implementing the Tech Prep initiative. Student who have applied, been accepted and are enrolled may receive advanced standing credit dependent upon the program of study. Upon issuance of advanced standing credit, the student will receive credit towards the appropriate associate degree, vocational diploma or vocational certificate program.

2. Administrators and/or faculties from both participating institutions agree to meet with each other and discuss the articulation process. These discussions will focus upon course competencies, instructional procedures, evaluation techniques, textbooks/software selection, required equipment and/or additional resources. On-site visits of each others facilities are highly recommended.

3. All articulating students will meet and maintain all entrance standards, prerequisites, and academic standards of Western Wisconsin Technical College and intended program of study.

4. The secondary portion of this tech prep program will become part of the student's permanent record and will be forwarded to the WWTC upon request by the student. Advanced standing credit will be granted by WWTC for articulated competencies and will appear on their transcript by course title and credit hour.

5. Tuition will not be charged by WWTC for courses which the student receives credit from the secondary institution.

6. This articulation agreement may be reviewed, evaluated, or altered as deemed necessary by the consent of any and/or all parties involved for the secondary school and Western Wisconsin Technical College.

Participating Institutions Commitment

We, the undersigned representatives of the listed institutions, support the Tech Prep concept and agree to the terms of this Articulation Agreement. We agree to support the appropriate commitment of staff to assist in the development and implementation of articulated curricula for the Tech Prep initiative. Each participating institution will designate a liaison person whose responsibility it will be to establish procedures necessary to carry out the terms of this Articulation Agreement.

	Dr. Jerry Redman or Mr. Kerry Hogan
High School Liaison	*Western Wisconsin Technical College Liaison*

Signatures

		WESTERN WISCONSIN TECHNICAL COLLEGE	
High School			
Board of Education President	*Date*	*District Board Chair*	*Date*
Superintendent	*Date*	*President*	*Date*

Curricular Articulation Agreement

between
Western Wisconsin Technical College
and

____

Statement of Intent

The purpose of the Articulation Agreement is to provide a mechanism through which vocational/technical education programs at the secondary and post-secondary levels will interface, thereby granting students who have mastered agreed-upon task competencies at the secondary level college credit for similar task competencies in vocational/technical programs at Western Wisconsin Technical College. Attached to this Articulation Agreement is a program-specific course competency profile jointly developed by the participating secondary school and Western Wisconsin Technical College.

Curricular Area

Division: ________________________________

Program Area: ________________________________

WWTC Course Title: ________________________________

H.S. Course Title(s): ________________________________

Signatures

We, the undersigned representatives of the institutions, agree to the terms of this Articulation Agreement.

HIGH SCHOOL: ________________________________

Principal	*Date*	*Curriculum Director*	*Date*
LVEC	*Date*	*Instructor*	*Date*

WESTERN WISCONSIN TECHNICAL COLLEGE

Vice-President Instruction	*Date*	*Curriculum Specialist*	*Date*
Division Dean	*Date*	*Chairperson/Program Head*	*Date*

Articles of Agreement

Please check (X) all clauses that have been mutually agreed upon by representatives of each institution.

Section I: We at Western Wisconsin Technical College agree to:

Part A: Curricular/Instructional Clauses

____ 1. Provide competency based curriculum and instructional materials for the articulated course(s) covered by this Agreement.

____ 2. Provide a list of facilities and resources (i.e., textbooks, software, equipment, supplies, media, etc.) required for each articulated course.

____ 3. Assist high school faculty with evaluating course competencies and standards to ensure that equivalent competencies and standards are achieved in the articulated high school course(s) covered by this Agreement.

____ 4. Provide instructor inservice and ongoing instructional support for those teaching Tech Prep courses governed by this Agreement.

____ 5. Provide a Certificate of Mastery to the high school for presentation to students completing the articulated course work.

Part B: Advanced Standing Credit Clauses

____ 1. Award Advanced Standing Credit(s) to those high school students who have mastered the agreed-upon task competencies that are attached to this Agreement. These credits will be part of the total required for the program and will reduce the number that must be taken after enrolling at WWTC.

____ 2. Award Advanced Standing Credit(s) to students who demonstrate mastery of agreed-upon task competencies by successfully completing a competency checklist and/or earning a grade of *(specify:)* __________ *(recommend "B")* or better in the high school course(s).

____ 3. **Not** require any student who has enrolled in an articulated course covered by this Agreement to pass a proficiency examination in order to demonstrate mastery of agreed-upon task competencies.

____ 4. Award Advanced Standing Credit(s) to students who enroll at Western Wisconsin Technical College within *(specify:)* __________ months *(recommend 18 months)* following high school graduation to be eligible for credit under this Agreement. If the time limit has expired, the student may take competency based Challenge examinations under the WWTC Advanced Standing Policy. In the event that a student attempts to enter a program which is filled, the above specified time limit on acceptance of credit may be extended at the option of WWTC.

____ 5. Determine the amount of Advanced Standing Credit(s) to be granted by comparing the student's competency achievement record with the attached course competency profile.

____ 6. Record a grade of "CR" (external transfer credit) on the student's WWTC transcript. The "CR" will not be used to calculate the student's grade point average.

____ 7. **Not** charge the school or student tuition or material fees for Advanced Standing Credits earned as a result of this Agreement.

____ 8. Award no more than *(specify:)* ________ % or _________ credits required for an associate degree or vocational diploma through Advanced Standing Credit. The maximum percentage allowed by State mandate is 75%.

Part C: Support Services Clauses

____ 1. Provide curricular cluster maps that identify a recommended high school course of study, career options, placement and salary data.

____ 2. Provide Tech Prep promotional/marketing materials and procedures to school districts for student distribution.

____ 3. Provide and process registration materials. Students must apply for admission through the regular admission procedure. Students who wish to enroll are admitted on a first-come, first-served basis as they meet admission requirements.

____ 4. Administer ASSET (Assessment of Skills for Successful Entry and Transfer) tests and interpret student scores. ASSET is administered free of charge at WWTC.

____ 5. List Advanced Standing Credits on transcripts by course title, credit hours, and "CR" grade designation.

Section II: We at ____________________ High School agree to:

Part A: Curricular/Instructional Clauses

____ 1. Adhere to and/or teach from the competency based curriculum and instructional materials for the articulated course(s) covered by this Agreement.

____ 2. Provide the appropriate facilities and resources that are required for instruction of the articulated course(s) covered by this Agreement.

____ 3. Provide transportation to and from classes, clinical laboratories, and/or field sites if necessary.

____ 4. Cooperate with WWTC faculty in evaluating course competencies and standards to ensure that equivalent competencies and standards are achieved in the articulated high school course(s) covered by this Agreement.

____ 5. Present WWTC's Certificate of Mastery to those students who have successfully mastered the agreed-upon task competencies identified in the articulated course work.

Part B: High School Credit Clauses

____ 1. Award high school credit(s) to those students who successfully complete the articulated course work and demonstrate mastery of the competencies attached to this Agreement.

____ 2. Inform students of the course(s) and/or articulated competencies that exist with WWTC under the provisions of this Agreement.

____ 3. Explain to participating students the appropriate provisions contained in this Agreement.

____ 4. Maintain a program-specific competency record for each student which identifies areas and levels of task achievement covered under this Agreement. This record will become part of the student's permanent record and must be verified by the participating teacher(s).

Part C: Guidance and Counseling Clauses

____ 1. Inform parents, students and community members of the basic concepts of Tech Prep and the individual Articulation Agreements with WWTC in the best manner possible.

____ 2. Use the career cluster maps to explain career options to middle and secondary students.

____ 3. Provide career counseling services for students enrolled in or seeking enrollment in Tech Prep courses.

____ 4. Distribute Tech Prep promotional/marketing materials to faculty and students.

____ 5. Forward an official transcript and copy of the Certificate of Mastery to WWTC if requested by the student upon his/her graduation from high school.

Section III: We at ____________________ High School agree to direct participating students to:

____ 1. Earn high school credit(s) and Advanced Standing Credit(s) at Western Wisconsin Technical College by successfully demonstrating mastery of the agreed-upon task competencies attached to this Agreement.

____ 2. Supply the following course materials and/or resources (e.g., uniform, goggles, etc.) *(specify:)* ____

____ 3. Meet the prerequisites of the program of study at Western Wisconsin Technical College and maintain the District's academic standards.

____ 4. Apply for admission through the regular admission procedures and pay the application fee (usually $15 if program is declared) to be eligible for Advanced Standing Credit(s) under this Agreement. Applicants are accepted on a first-come, first-served basis.

____ 5. Request that the high school counselor supply WWTC with a copy of the Certificate of Mastery and an official high school transcript.

____ 6. Complete and return to WWTC a Request For Advanced Status Form.

____ 7. Enroll and attend classes at WWTC before Advanced Standing Credit(s) will be recorded on the WWTC transcript. Please note that Advanced Standing Credit **may not** transfer to another post-secondary institution.

____ 8. Enroll within *(specify:)* __________ months following high school graduation to receive Advanced Standing Credit(s) under this Agreement. If the designated time interval has expired Advanced Standing Credit(s) may be granted by successfully completing of a Challenge examination.

Section IV: We, at Western Wisconsin Technical College and ______________________ High School agree to:

___ 1. Review periodically the provisions contained in and articulated competencies attached to this Articulation Agreement.

___ 2. Require a reconfirmation of this Agreement if significant changes occur in course content, key instructional staff, teaching methodology, evaluation techniques, course resources such as textbooks, software, etc. Such changes will necessitate the signing of a new Agreement.

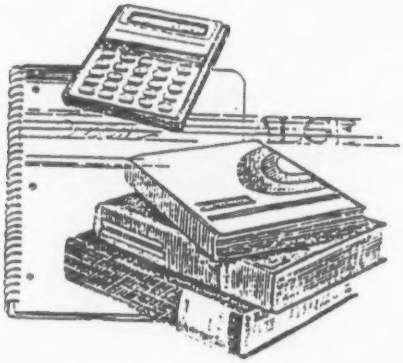
___ 3. Alter the competency task list and/or provisions of this Agreement only upon mutual consent by both the participating secondary school(s) and Western Wisconsin Technical College.

___ 4. Follow existing WWTC's academic policies and procedures when the provisions of this Articulation Agreement do not address the specified issue, policy or procedure.

___ 5. Waive the provisions of this Agreement should they be in conflict with State Statute, VTAE/DPI Directives, Board Policy and/or Accreditation Standards.

___ 6. I, ____________________, will provide WWTC with a class list which includes the student's social security number. This will be used to verify competency obtainment should the student enroll at Western.

___ 7. Other *(specify:)* ____
____.



Student Articulation Agreement

between

Western Wisconsin Technical College

and

____

________________________	________________________
Student Name	*Social Security Number*

is currently enrolled in an articulated course which provides the opportunity for him/her to obtain Advanced Standing Credit(s) at Western Wisconsin Technical College. Credit will be awarded to those students who satisfactorily complete the necessary course work and demonstrate sufficient mastery of the agreed-upon task competencies for ______________________________ .
WWTC Course Name and Number

Please complete:

Division: ____________________ Program: ____________________

Enrollment Date: ________________ Graduation Date: ________________

Articles of Agreement

Advanced Standing Credit(s) will be recorded as "CR" (external transfer credit) and will not be used to calculate the student's grade point average. No testing will be required by WWTC, and no tuition and fees will be charged for these Advanced Standing Credit(s). Please note that Advanced Standing Credit may not transfer from WWTC to another post-secondary institution.

For Advanced Standing Credit to be granted, the following provisions must be met:

1. Apply for admission through the regular admission procedures and pay the application fee (usually $15 if program is declared). Applicants are accepted on a first-come, first-served basis.
2. Meet the prerequisites of the program of study at Western Wisconsin Technical College and maintain the District's academic standards.
3. Request that the high school counselor supply WWTC with a copy of the Certificate of Mastery and an official high school transcript.
4. Complete and return to WWTC a Request For Advanced Status Form.
5. Enroll and attend classes at WWTC within designated time frame.

Signatures

We, the undersigned representatives of the institutions, agree to the terms of this Articulation Agreement.

Student	*Date*	*High School Teacher*	*Date*
Parent/Guardian	*Date*	*Registrar*	*Date*

Certificate of Mastery

This is to certify that

Jane Doe

has successfully completed the necessary articulated course work and demonstrated mastery of agreed-upon task competencies in

Desktop Publishing 1

This student will receive Advanced Standing Credit at

WESTERN WISCONSIN TECHNICAL COLLEGE

DATE

VICE-PRESIDENT OF INSTRUCTION — WWTC

PRINCIPAL — HIGH SCHOOL

Contract Agreement

between

Western Wisconsin Technical College

and

Western Wisconsin Technical College (WWTC) agrees to provide service to (***High School Name)*** in the area of (Curricular Area--Written Communications) for ***institutional credit***. These services will be delivered on-site at (Location) beginning (Date) ending on (Date). Overall coordination and evaluation of services provided by Western Wisconsin Technical College will be the responsibility of (Dean--Dr. George Findlen, Dean of General Education) and Dr. Jerry Redman, Tech Prep Coordinator.

It is agreed that payment for contracted services, as detailed in **ATTACHMENT A**, will be made to Western Wisconsin Technical College by **(High School Name)** within 30 days of the receipt of a bill for services. Western Wisconsin Technical College will subcontract **(High School Name)** for instruction as described in **ATTACHMENT B**. Contained in **ATTACHMENT C** are special provisions that have been mutually agreed upon by both participating institutions.

Institutional Credit offerings are a method of meeting the VTAE mission of contracting with secondary schools to provide services for high school age students. An institutional credit offering is a technical college course offered to students enrolled in a high school which grants credit toward graduation from high school and a VTAE approved program. It results in a VTAE district transcripted course and will be used to calculate the student's grade point average. VTAE requirements for offering a course for institutional credit are that:

- the course is approved by the State Board.
- the course is required in an approved occupational program.
- the course is taught by an instructor who has appropriate DPI and VTAE certification.
- no less than the current program and material fees are collected by the district.
- the course is recorded on a VTAE transcript.

It is understood that Western Wisconsin Technical College retains the proprietary rights to any curriculum materials used or developed by Western Wisconsin Technical College as part of this contract.

(High School Name) certifies, as party to this contract, that it does not discriminate against employees, enrollees, or applicants for employment or enrollment on the basis of age, race, color, sex, creed, handicap, political persuasion or ancestry. Western Wisconsin VTAE District employees under this contract remain under the exclusive control of the District.

Both parties to this contract recognize that the need for changes in this contract could arise due to unforeseen circumstances. It is, therefore, agreed that both fiscal and programmatic modifications may be made as mutually agreed to by the parties involved.

This contract is subject to District Board and School Board approval at its next regular meeting. If the District Board and/or School Board does not approve this contract, it will be canceled.

We, the undersigned representatives of the institutions, agree to the terms of this Contract Agreement.

Division Dean	*Date*	*Principal*	*Date*
Curriculum Specialist	*Date*	*Instructor*	*Date*

WESTERN WISCONSIN TECHNICAL COLLEGE

ATTACHMENT A

Contained in Attachment A are the cost of services that will be paid to Western Wisconsin Technical College by (High School Name).

Firm: **High School Name**

Course: 801-195 Section 80 - Written Communications

Description: Teaches the writing process which includes researching, prewriting, drafting, revising, editing and documentating. Through a variety of writing assignments, the students will analyze audience and purpose, research and organize ideas, and format and design documents based upon subject matter and content.

Dates: August 20, 1992 through January 14, 1993 (18 weeks)

Day & Times: MWF, 10:48 - 11:36, Lecture/Discussion Sessions
TTH, 10:48 - 11:36, Laboratory Sessions

Cost:	I. Fees		$132.65
	- Program Fees	123.00	
	- Material Fees	3.50	
	- Activity Fees	6.15	
		132.65	
	II. Textbook		$ 25.70
	- The Writer's Way	25.70	
	III. Miscellaneous		$ 5.00
	- ID Card	5.00	
	TOTAL COSTS (per student)		$163.35
	Projected Enrollment		08 students
	TOTAL PAYMENT DUE		$1,306.80

WESTERN WISCONSIN TECHNICAL COLLEGE

ATTACHMENT B

Contained in Attachment B are subcontract fees that Western Wisconsin Technical College will pay to (High School Name) for instructional services.

Firm: **High School Name**

Course: 801-195 Section 80 - Written Communications

Description: Teaches the writing process which includes researching, prewriting, drafting, revising, editing and documentating. Through a variety of writing assignments, the students will analyze audience and purpose, research and organize ideas, and format and design documents based upon subject matter and content.

Dates: August 20, 1992 through January 14, 1993 (18 weeks)

Day & Times:
MWF, 10:48 - 11:36, Lecture/Discussion Sessions
TTH, 10:48 - 11:36, Laboratory Sessions

Costs:

I. Salary Schedule for Instruction

- Course Level	300
- Step	05
- Rate	$17.33

II. Hours of Instruction
- 50 hours x $17.33 per hour

TOTAL COSTS	$866.50

WESTERN WISCONSIN TECHNICAL COLLEGE

ATTACHMENT C

Attachment C contains special provisions that have been mutually agreed upon by all participating institutions.

1. **Admissions Procedures:** Students participating under this Agreement must meet the prerequisites of the program of study at Western Wisconsin Technical College. These students must apply for admission through the regular admissions procedure. Applicants are accepted on a first-come, first-served basis.

2. **Academic Standards:** The enrolled student must maintain Western Wisconsin Technical College's standards which include attendance, performance and student conduct codes.

3. **Course Content:** The instructor will follow the course outline provided by the Western Wisconsin Technical College and will submit a syllabus to the General Education office which includes a daily topic outline.

4. **Course Requirements:** The instructor will require five essays plus a research paper which shall be at least ten pages in length. The essays must be the types specified in the official course outline. If possible, all completed papers should be typed.

5. **Textbook:** The instructor will use the text which has been adopted by the appropriate division faculty of Western Wisconsin Technical College.

6. **Transportation:** Participating high schools are responsible for providing transportation to and from classes and/or field trips to area institutions or sites.

7. **Instructional Approach:** Where possible and appropriate, the instructor will utilize the workshop or process approach to the teaching of writing.

8. **Contact Person:** Questions or concerns pertaining to course content or methodology may be addressed to Mary O'Sullivan, Department Head of Communication Skills, at (608) 787-9197.

9. **Grading:** The instructor will assign grades according to Western Wisconsin Technical College's grading policy.

10. **Certificates:** Upon written request by the participating high school, Western Wisconsin Technical College will provide certificates to students who have successfully completed the required course competencies.

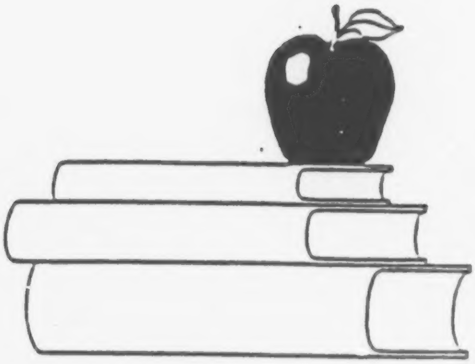
11. **Enrollment Requirements:** The minimum enrollment for institutional credit courses is 12 students. Course enrollments less than 12 are subject to approval by the appropriate Dean.

12. **Explanation of Provisions:** Participating high schools are responsible for explaining the appropriate provisions of this Agreement to students and parents.

13. **Policies and Procedures:** Western Wisconsin Technical College's policies and procedures will be followed concerning any additional issues not addressed in this Agreement.

14. **Agreement Review and Revisions:** Upon completion of this program of study, all participating institutions will periodically review the provisions contained in this Agreement. Modifications to this Agreement, including curricular revisions, will only be made by mutual consent of all participating institutions.

15. **Tech Prep Promotion:** All participating institutions agree to inform parents, students and staff of the Tech Prep initiative. Additionally, the high school will distribute Tech Prep promotional and curricular materials to faculty and students.



WESTERN
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TECHNICAL
COLLEGE

WESTERN WISCONSIN TECHNICAL COLLEGE
Post-Secondary Enrollment Options (PSEO)
Application Form

***Part A: Student's Request** - Please complete the following:*

Student: ______________________________ Social Security Number: ______________
Last First Middle Initial

Address: ____
Street City State ZIP Code

Home Phone Number: ______________ Date of Birth: ______________

I am a legal resident of (*check:*)
____ City
____ Village
____ Township
of ______________ ______________
County State

Parent/Guardian Name: ______________ Date of Application: ______________

I request entry to WWTC: ______________ Year (*check:*) ____ Fall ____ Spring ____ Summer

Grade level I will be in during the semester of requested entry to WWTC (*check:*) ____ 11 ____ 12

Location I plan to attend (*check:*)
____ La Crosse ____ Black River Falls ____ Independence
____ Mauston ____ Tomah ____ Viroqua

Courses I am interested in:
Note: The limit is 15 credits per semester.

Course Number	Course Name	Number of Credits	*I request these courses for (check one or both)* H.S. credit / WWTC credit	Estimated Cost per Course

- I understand that if I am accepted, I will be classified as an Undecided Program student. Undecided Program students are accepted to the college, not to a particular class until the day that Undecided Program students register and actually complete the registration process. Students are admitted to courses on a space available basis.
- I certify that the information on this application is true and complete to the best of my knowledge.
- I authorize Western Wisconsin Technical College and my high school to share information regarding my high school records. WWTC is also permitted to disclose information about courses, attendance, and grades.

______________________________ ______________________________
Student's Signature Date *Parent/Guardian's Signature Date*

***Part B: School Board Approval** - Please submit to High School Contact Person for completion.*

Name of High School: ______________ High School Contact Person: ______________

Address: ______________________________ Phone: ______________
Street City State ZIP Code

Check one:
____ **Yes**, this student is approved to enroll for both high school credit and post-secondary credit. We will reimburse WWTC for tuition, fees and materials.
____ **Yes**, this student is approved to enroll but for post secondary-credit **only**. The student will be responsible for tuition, fees and materials.
____ **No**, this student does not have permission to enroll.

____
School Contact Person's Signature Date

(Please mail to WWTC Admissions Office
304 North 6th Street, P.O. Box 908,
La Crosse, WI 54602-0908)

PSEO INFORMATION SHEET

Definition:

Post-secondary enrollment options is a program in which any 11th or 12th grade pupil enrolled in a public school would be allowed to attend a Wisconsin institution of higher education for the purpose of taking one or more courses beginning in the 1992-93 school year. Students may take courses for high school credit and/or for post-secondary credit.

Admission to courses under this program should not be construed as admission to the college granted after high school graduation.

Criteria:

*Student must be enrolled in a public school and be in the 11th or 12th grade.

*Must have local school board approval to take a post-secondary course for high school credit.

*Local school board approval is not required for students taking WWTC courses outside of regular school hours for post-secondary credit only.

*Pupils in the 11th and 12th grades of public schools who attend VTAE institutions under s.118.15(1)(b) Wisconsin Statute, **may not** enroll in an institution of higher education under this program.

***Students will be admitted to courses on a space available basis.**

Form to Use:

*WWTC Post-Secondary Enrollment Options (PSEO) Application Form.

*Forms are available from:

WWTC Information Center
304 North Sixth Street
La Crosse, WI 54602-0908
(608) 785-9578

or

WWTC Extended Campus Counselor
Appointments made by calling:
Independence (715) 985-3392
Mauston (608) 847-7364
Tomah (608) 372-9292
Black River Falls (715) 284-2253
Viroqua (608) 637-2612

*The PSEO Application Form was designed to serve as both a PSEO application to WWTC and a PSEO request (to replace the P1-8700 form)to notify the local school board.

Cost:

*School district is responsible for paying the costs (tuition, fees, books and, in some cases transportation) if the student has school board approval to take a post-secondary course for high school credit.

*If a student receives both high school and post secondary credit, the local school district is required to cover the cost (same as above).

*Students taking courses for post-secondary credit only are responsible for their own fees.

Process and Implementation:

*The first step for students wishing to enroll in a PSEO course is to call Diane Rud, Admissions Manager, WWTC, (608) 785-9567. The student is to indicate what type of coursework they are interested in. They will be referred to a counselor who has expertise in that area.

*By March 1 for the fall semester, by October 1 for the spring semester, and by February 1 for the summer session, students must submit the PSEO Application Form to their local school board for approval. **It is advisable for the student to indicate one or more alternate courses in the event that the first choice course is filled to capacity.**

*The semester prior to entry, the local school board submits the WWTC Post-secondary Enrollment Options (PSEO) Application Form after it is approved and signed. Send to WWTC Admissions Office, 304 North Sixth Street, La Crosse, WI 54602-0908. Please send by May 15 for the fall semester, December 15 for the spring semester and March 15 for the summer term.

*Students who are accepted to the college will receive an acceptance letter designating them as PSEO students. This letter does not in any way guarantee that those courses requested by the student will be available. It will provide clearance for the student to register if space is available.

*A copy of the acceptance letter is also sent to the local school district.

*Student receives student orientation/payment of fees information and is required to report on the designated date to complete the orientation-registration process, register for classes, and obtain textbooks. PSEO students will register on the day designated for undecided program students.

*Annually, by September 1, each local school district should forward to Diane Rud, Admissions Manager, WWTC Admissions Office, the name and phone number of the contact person responsible in the school district to administer the Postsecondary Enrollment Options Program.

Follow-Up:

*Students must notify their school board of the courses they enrolled in immediately following registration.

*If space is not available or if the student becomes enrolled in a different course than originally indicated, the student must notify the local school board immediately.

*The college has 30 days after classes begin to formally notify the local school board when an admitted 11th or 12th grader enrolls in a selected course under this program.

*WWTC may disclose the student's grades, courses taken, and attendance record to the local school district. Student permission for release of information is included on the PSEO Application Form.

Monitoring of Student's Attendance & Performance:

*Grades will be forwarded by WWTC to the student and designated school board. Attendance information will be provided upon request.

WESTERN
WISCONSIN
TECHNICAL
COLLEGE

LA CROSSE
BLACK RIVER FALLS
INDEPENDENCE
MAUSTON
TOMAH
VIROQUA

LEE RASCH, Ed.D.
President

ADMISSION PROCEDURES

1. Submit the Application Form and a $15.00 non-refundable application fee.

   If you are interested in **FINANCIAL AID**, please contact the WWTC Financial Aid Office in La Crosse at (608) 785-9579 or another of our WWTC Campuses.

WWTC Campuses

WWTC-Black River Falls	(715) 284-2253
WWTC-Independence	(715) 985-3392
WWTC-Mauston	(608) 847-7364
WWTC-Tomah	(608) 372-9292
WWTC-Viroqua	(608) 637-2612

2. Submit your high school transcript, GED, or Ability to Benefit (ATB)* scores. Send post-high school transcripts, if any. If your high school transcript is submitted before you graduate, ask your school to send us a completed one after you graduate as well.
   (* Note: Non high school graduates without a GED/HSED are required to take ASSET or an acceptable substitute. Contact the GOAL Counselor at WWTC, (608) 785-9535, for further information if you do not have a high school diploma, GED or HSED.)

3. The ASSET Assessment is required for all program students (except Undecided, Apprenticeship programs, Supervisory Management, Industrial Engineering Technician, Quality Assurance and Farm Business and Production Management).

   ASSET is administered free of charge at WWTC. Your social security number will be requested when you take the ASSET. In lieu of ASSET scores, ACT scores or acceptable post-secondary credits may be submitted.

4. When all admissions materials have been submitted, you will receive a letter indicating that:
   a) you make an appointment with a career counselor, OR
   b) you have been accepted into the program.

   When you are accepted into your chosen program, a place is reserved for you.

5. Registration for Classes and Orientation
   The final steps of the application procedure are orientation and registration at the beginning of the term you wish to start school. You will receive a letter notifying you of orientation/ registration schedules.

Please call the Admissions Office at (608) 785-9476 or your area campus if you have questions or need further information. Your questions and concerns are important to us.

3/92

304 North Sixth Street
La Crosse, WI
54602-0908
(608) 785-9200
FAX (608) 785-9205

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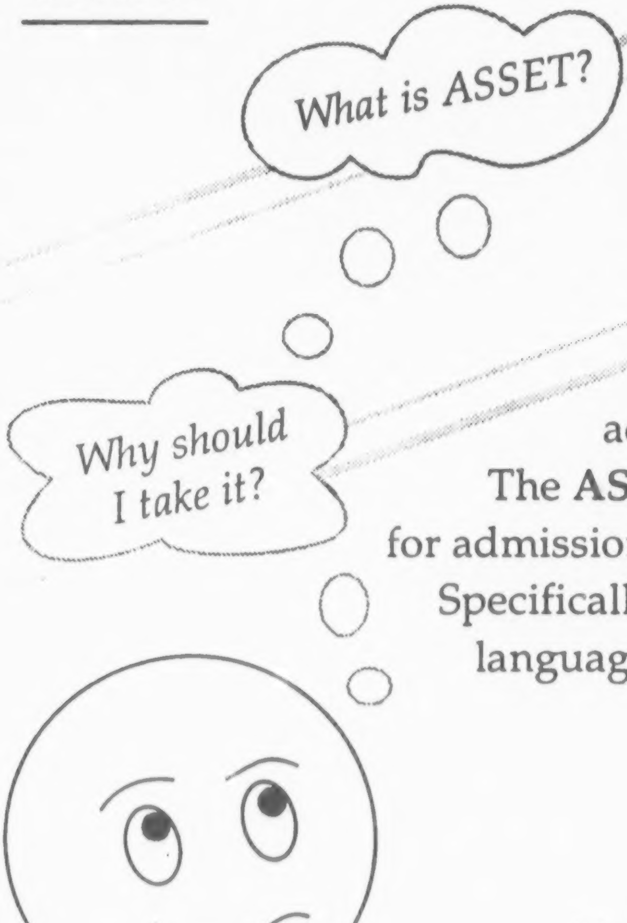

What is ASSET?
Why should I take it?

ASSET is ...

The ASSET
***(Assessment** of **Skills** for*
Successful Entry** and **Transfer)
is designed to help identify your
academic strengths and weaknesses.
The **ASSET** is required, in most instances,
for admission to a program of study at *Western*
Specifically, you will be tested in the areas of
language usage, reading and mathematics.
You may also need to take a
science or algebra test,
depending upon the program
you choose to enter at the college.
You will have 25 minutes to complete
each unit of the assessment.
The ASSET is not a competitive admissions exam.

If you would like information to help you prepare for **ASSET**
please call **(608) 785-9585.**

TECH PREP

STRATEGIC PLAN

TIMELINE

Tech Prep Timeline

JANUARY

- *Phase I: Development of Strategic Plan*
  - *ASSEMBLE TECH PREP COUNCIL AND PLANNING AND IMPLEMENTATION COMMITTEES*
  - *PARTICIPATE IN LEADERSHIP GROUP ACTIVITIES*
  - *DESIGN TECH PREP MODEL*
  - *DEVELOP TECH PREP STRATEGIC PLAN*
  - *HOST TECH PREP KICKOFF BANQUET*
- *Phase II: Fulfillment of Grant Commitments*
  - *CONDUCT ON-SITE VISITS*
  - *COORDINATE TEACHER EXCHANGES*
  - *IDENTIFY COURSES FOR ARTICULATION*
  - *COORDINATE REGIONAL CURRICULAR SEMINARS*
  - *PLAN 1992-93 RFP*
- *Phase III: Articulation of Curricula*
  - *ACQUIRE DACUM STUDIES*
  - *IDENTIFY COURSE COMPETENCIES*
  - *DEVELOP CAREER CLUSTER MAPS*
  - *FACILITATE IMPLEMENTATION OF APPLIED ACADEMICS*
  - *SIGN ARTICULATION AND CONTRACT AGREEMENTS*

JUNE

TECH PREP

STRATEGIC PLAN

UNDERSTANDING THE CONCEPT

The Wisconsin Perspective

1991 STATUE

Section 2424p. 118.34 Technical preparation programs. (1) In cooperation with a vocational, technical and adult education district board, each school board shall establish a technical preparation program in each public high school located in the school district. The program shall consist of a sequence of courses, approved by the council under sub. (2), designed to allow high school pupils to gain advanced standing in the vocational, technical and adult education district's associate degree program upon graduation from high school.

(2) The vocational, technical and adult education district director shall appoint a technical preparation council to coordinate the establishment of the technical preparation programs. The council shall consist of 12 members.

(3) The department and the board of vocational, technical and adult education shall provide technical assistance to school boards to develop technical preparation programs in each high school. Annually, the school board shall evaluate its program and report the results to the state superintendent and the board of vocational, technical and adult education.

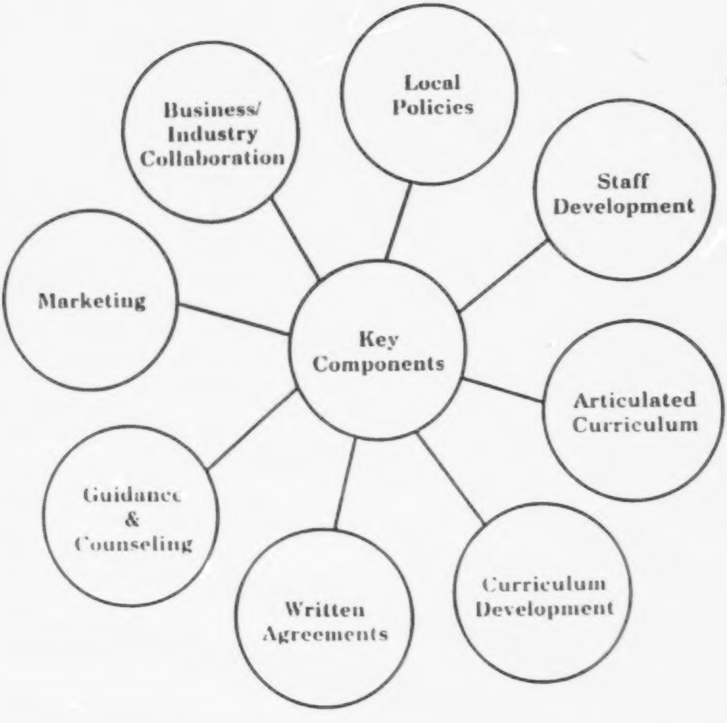
DEFINITION OF TECH PREP

- cooperation between K-12 schools, **technical colleges, universities, business, labor** and **community** to develop
- **applied/integrated** task-based, technical and academic curriculums which provide
- a **coherent sequence** of courses and **experiences** designed to provide
- high school graduates with more **technical and academic competence** leading toward
- the goal of successful **transition** from **school** to **postsecondary** technical education and/or to **work**

GOALS OF TECH PREP

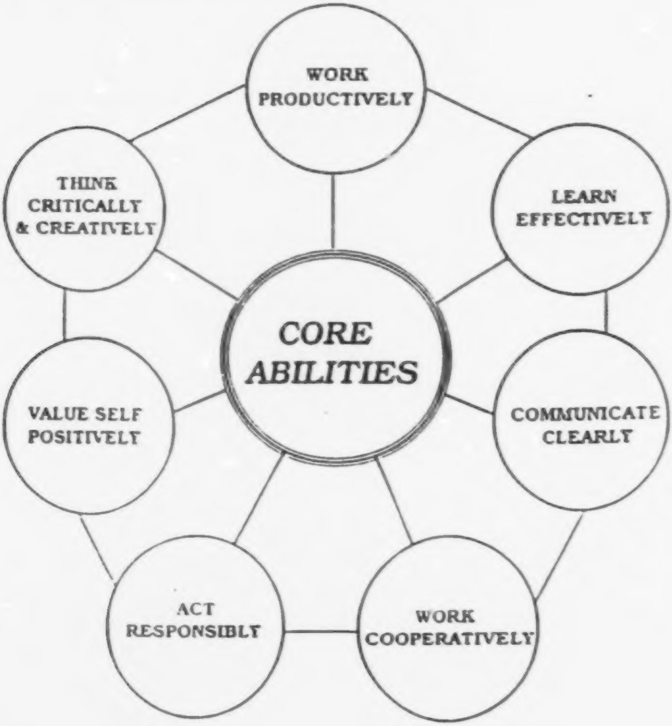
1. Improve student achievement in basic skills.
2. Increase scholastic aptitude test scores.
3. Decrease dropout rate.
4. Increase % of high school graduates attending 2-year and 4-year colleges.
5. Increase technical literacy of all students.
6. Improve student attitudes toward school and learning.

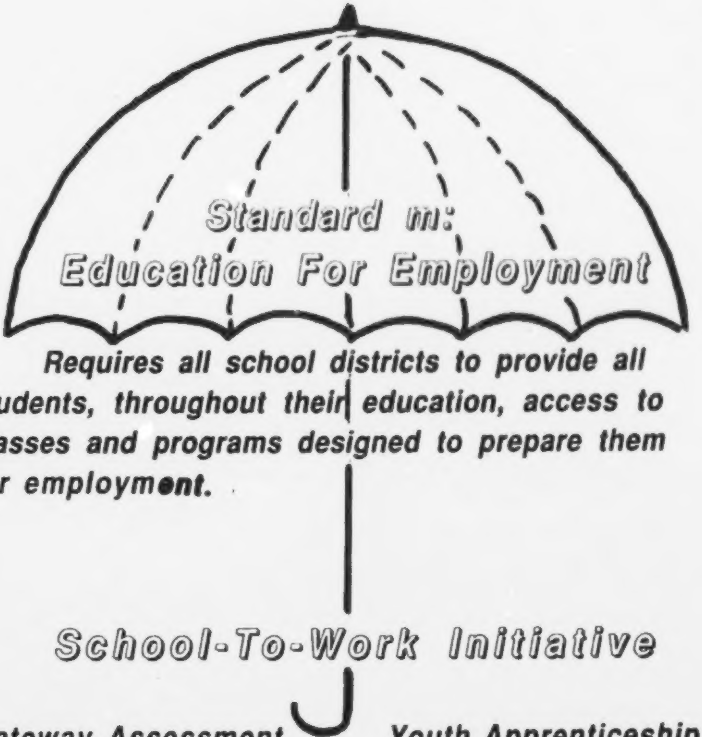
Components of Tech Prep



CORE ABILITIES

Core Abilities are the transferable skills essential to an individual's success regardless of occupation or community setting. These skills complement specific occupational skills, broaden one's ability to function outside a given occupation and connect occupational, personal and community roles and perspectives.





Standard m:
Education For Employment

Requires all school districts to provide all students, throughout their education, access to classes and programs designed to prepare them for employment.

School-To-Work Initiative

Gateway Assessment
Tech Prep
Post Secondary Enrollment Options

Youth Apprenticeship
Child Labor Laws
Advanced Placement

WISCONSIN'S STATEWIDE NETWORKING SYSTEM

To better prepare students for the school-to-work transition.

State Level-TPSMT

Wisconsin Board of Vocational, Technical & Adult Education	WBVTAE
Department of Public Instruction	DPI
Center on Education and Work	UW

Regional Level-TPLG

- 16 Tech Prep Coordinators
- 16 Public School Representatives

Local Level-Consortiums

- 8 Public School Consortiums
- University and PIC Representation
- Tech Prep Council
- Planning and Implementation Committee

DEVELOPING A TECH PREP STRATEGIC PLAN

- *What do we want to achieve?*
- *Why do we want to accomplish this?*
- *Who will be involved?*
- *How will this task be carried out?*
- *What resources are needed?*
- *What are the timelines?*
- *How do we measure success?*

Tech Prep
WISCONSIN

TECH PREP ACTIVITIES CONTINUUM

"People Talking To People"

Faculty Exchanges
On-Site Visits
Tech Prep Workshops

ONE
ROAD
TO
SUCCESS

Career Cluster Mapping
Applied Academics
Curricular Seminars
Development of Units

Focus Sessions
Articulation
- ***Advanced Standing***
- ***Institutional Credit***
- ***PSEO***

Program Modifications

Letter to the Editor

There was this car accident, and .....

Editor: I recently heard an interesting story I'd like to share with you. There was a couple, who were traveling to Wausau. The driver lost control of the car and slid off the road.

They called the police department and spoke to the "dispatcher" who in turn sent a "police officer" to the accident scene. The officer determined that the passenger needed medical attention so a call was made to "E.M.T.s" who transported the couple to the hospital.

As soon as they arrived at the hospital a "registered nurse" assessed the person who was then seen by a medical doctor. The doctor needed an X-ray so the person went to radiology, where a "radiology technician" took the X-ray and all the records at the hospital that day were transcribed by a "medical transcriptionist." The owner then took the car to an "insurance appraiser" who indicated that an "automotive repair technician" and an "auto body technician" would be necessary to complete all the repairs.

This story is like most we hear. The only thing different is that the only occupation not taught at a technical college is the medical doctor. And incidentally all the occupations in quotes are offered right here at Northcentral Technical College.

The moral of the story is that what we take for granted in our everyday lives is they are safe and secure because of men and women who have chosen technical careers and are doing a great job, due largely to the technical colleges, here, and across the state of Wisconsin.

Richard A. Franke, Instructor, NTC, Merrill

Tech Prep Statistics

We know this about jobs in the future. . .

- ✓ 80% of jobs will require education beyond high school, but not a baccalaureate degree.
- ✓ Businesses need not only higher standards, but different skills.
  - problem solving skills
  - computer skills
  - critical thinking skills
  - teamwork
  - higher level math, science, and communication skills

Tech Prep
Wisconsin Perspectives

13%	of those entering ninth grade will drop out before graduating high school
48%	of high school graduates enter 4-year colleges or universities; half of those will drop out
11%	of high school graduates enter technical colleges
41%	of high school graduates make other life choices

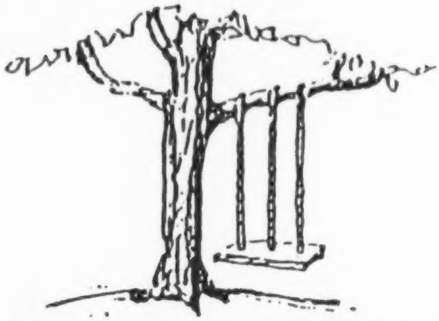
Tech Prep
Facts About Technical Colleges

11% directly out of high school
Average age 30 yrs.
60% female, 40% male
80% part-time, 20% full-time
60% receive financial aid
95% employed within 6 months of graduation
86% employed in their area of training
Median monthly income 2 yr. AD $1299 / month
Median monthly income 2 yr. VD $1325 / month

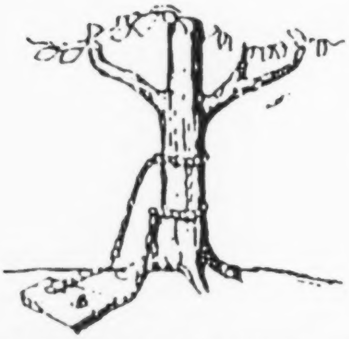
The Lighter Side of

TECH PREP!!!!!!

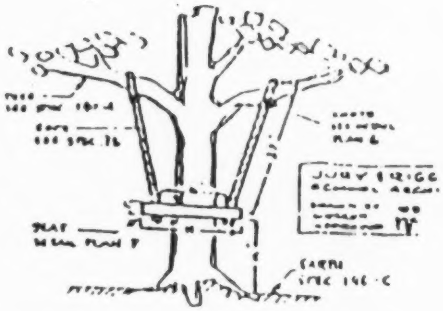
AS DPI REQUESTED IT



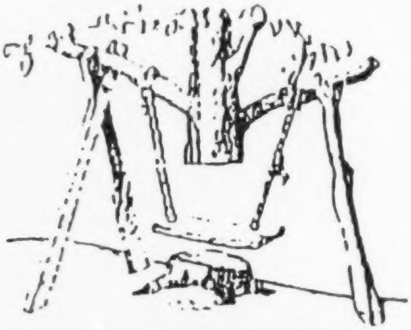
AS THE LEGISLATURE MANDATED IT



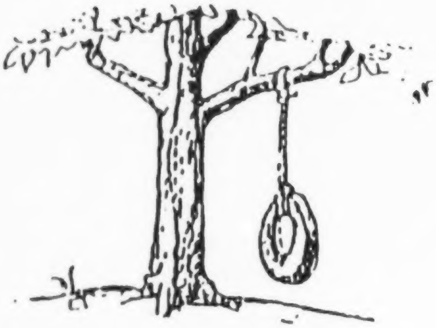
AS WBVTAE APPROVED IT



AS THE COUNCIL DESIGNED IT



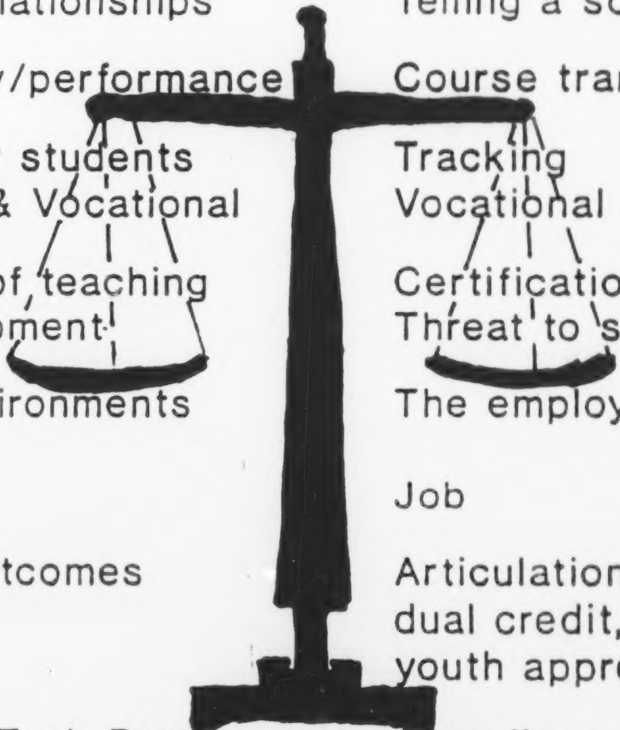
AS SCHOOL DISTRICTS
IMPLEMENTED IT



WHAT THE STUDENTS WANTED

WORRY

Tech-Prep Elements and Concepts



WORRY MORE ABOUT...	WORRY LESS ABOUT...
Peer and content relationships	Telling a school what to do
Student competency/performance	Course transfer
Creating Options for students	Tracking
Blending Academic & Vocational	Vocational education
Quality/Suitability of teaching	Certification
Professional development	Threat to staff
The workplace (environments and cultures)	The employer
Lifelong learning	Job
People, Process, Outcomes	Articulation, advanced standing dual credit, 2+2, 1+2 etc., youth apprenticeship
Intent and Spirit of Tech-Prep	Compliance

by Mike Tokheim, WBVTAE

School-to-Work Transition Resource List

Apprenticeship for Adulthood, by Steven Hamilton. Available at local bookstores.

Training Strategies: Preparing Non-College Youth for Employment in U.S. and Foreign Countries; available from U.S. General Accounting Office, P.O. Box 6015, Gaithersburg, MD 20877 (Free).

Vocational Education: Opportunity to Prepare for the Future; available from U.S. Accounting Office, P.O. Box 6015, Gaithersburg, MD 20877 (Free).

Effective Schools Programs: Their Extent and Characteristics; available from U.S. General Accounting Office, P.O. Box 6015, Gaithersburg, MD 20877 (Free).

The Forgotten Half: Non-College Youth in America; Available from The William T. Grant Foundation, 1001 Connecticut Avenue NW, Suite 301, Washington, D.C. 20036

Tech-Prep Associate Degree: A Win Win Experience, by Dan Hull and Dale Parnell; Available from CORD, 601 Lake Air Drive, Waco, TX 76710.

The Neglected Majority; by Dale Parnell. Available from CORD , 601 Lake Air Drive, Waco, TX 76710.

America's Choice: High Skills or Low Wages; the report of the Commission of the Skills of the American Workforce, 1990. Available from the National Center on Education and the Economy, P.O. Box 10670, Rochester, NY 14610 ($18 each).

Training in America; Anthony Carvevala and Janet Johnson, available from the National Center on Education and the Economy, P.O. Box 10670, Rochester, NY 14610.

A Nation Prepared: Teachers for the 21st Century; a report of the Task Force on Teaching as a Profession for the Carnegie Forum on Education. Available from National Center on Education and the Economy, P.O. Box 10670, Rochester, NY 14610 ($9.95 each).

America 2000: An Education Strategy Source Book; available from the U.S. Department of Education, Washington, D.C. 20202, 1-800-872-5327.

Transition from School-to-Work: Linking Education and Worksite Training; a report on apprenticeship and co-op programs to congressional requesters. Available from U.S. General Accounting Office, P.O. Box 6015, Gaithersburg, MD 20877 (Free).

Work-Based Learning: Training America's Workforce; speaks on the topic of apprenticeship. Available from U.S. Department of Labor, 200 Constitution Avenue N.W., Washington, D.C. 20210.

Workplace Basics: The Skills Employers Want, by Anthony Carnevala, Leila Gainer and Ann Meltzer. Available from American Society for Training and Development, 1630 Duke Street, Box 1443, Alexandria, VA 22313.

SCANS: Secretary's Commission on Achieving Necessary Skills; available from SCANS Office, Room C-2318, U.S. Department of Labor, 200 Constitution Avenue N.W., Washington, D.C. 20210.

The AVA Guide to the Carl D. Perkins Vocational and Applied Technology Education Act of 1990; available from AVA 1410 King Street, Alexandria, VA 22314 ($17.95 each).

Voices from School and Home: Wisconsin Parents and Students Focus on Youth Apprenticeship; a report on focus groups discussions conducted by Jobs for the Future. Available from Wisconsin Department of Public Instruction, Bureau for Vocational Education, P.O. Box 7841, Madison, WI 53707-7841.

A World Class Workforce For Wisconsin: Governor's Commission for A Quality Workforce; available from Wisconsin Department of Administration Document Sales, P.O. Box 7840, Madison, WI 53707-7840 ($3.50 each).

Assuring Wisconsin's Economic Future: Improving Occupational Options for Youth; a report of the Joint WBVTAE/DPI Task Force on Implementing Occupational Options in Wisconsin. Available from UW Vocational Sciences Building, 1025 West Johnson Street, Madison, WI 53706 (Request #VE205).

Combining School and Work: Options in High Schools and Two-Year Colleges; available from U.S. Department of Education, Office of Vocational and Adult Education, 400 Maryland Avenue S.W., Washington, D.C. 20202-7100.

A New Design for Education in Wisconsin; Commission on Schools for the 21st Century. Available from Document Sales, P.O. Box 7840, Madison, WI 53707.

National Tech-Prep Network Newsletter, membership available from CORD, 601 Lake Air Drive, Waco, TX 76710.

Wisconsin Apprenticeship: A Guide to Wisconsin's Apprenticeship System; available from Bureau of Apprenticeship Standards, P.O. Box 7922, Madison, WI 53707.

States and Communities on the Move; available from William T. Grant Foundation, 1001 Connecticut Avenue NW, Suite 301, Washington, D.C. 20036-5541.

TECH PREP

CURRICULUM DEVELOPMENT

RESOURCES AND ACTIVITIES

THE SCANS REPORT:

A Listing of the

Enabling and Functional Skills

WHAT WORK
REQUIRES OF
SCHOOLS
****
A SCANS REPORT FOR
AMERICA 2000

A THREE-PART FOUNDATION

Basic Skills: Reads, writes, performs arithmetic and mathematical operations, listens and speaks

A. *Reading*—locates, understands, and interprets written information in prose and in documents such as manuals, graphs, and schedules

B. *Writing*—communicates thoughts, ideas, information, and messages in writing; and creates documents such as letters, directions, manuals, reports, graphs, and flow charts

C. *Arithmetic/Mathematics*—performs basic computations and approaches practical problems by choosing appropriately from a variety of mathematical techniques

D. *Listening*—receives, attends to, interprets, and responds to verbal messages and other cues

E. *Speaking*—organizes ideas and communicates orally

Thinking Skills: Thinks creatively, makes decisions, solves problems, visualizes, knows how to learn, and reasons

A. *Creative Thinking*—generates new ideas

B. *Decision Making*—specifies goals and constraints, generates alternatives, considers risks, and evaluates and chooses best alternative

C. *Problem Solving*—recognizes problems and devises and implements plan of action

D. *Seeing Things in the Mind's Eye*—organizes, and processes symbols, pictures, graphs, objects, and other information

E. *Knowing How to Learn*—uses efficient learning techniques to acquire and apply new knowledge and skills

F. *Reasoning*—discovers a rule or principle underlying the relationship between two or more objects and applies it when solving a problem

Personal Qualities: Displays responsibility, self-esteem, sociability, self-management, and integrity and honesty

A. *Responsibility*—exerts a high level of effort and perseveres towards goal attainment

B. *Self-Esteem*—believes in own self-worth and maintains a positive view of self

C. *Sociability*—demonstrates understanding, friendliness, adaptability, empathy, and politeness in group settings

D. *Self-Management*—assesses self accurately, sets personal goals, monitors progress, and exhibits self-control

E. *Integrity/Honesty*—chooses ethical courses of action

FIVE COMPETENCIES

Resources: Identifies, organizes, plans, and allocates resources

A. *Time* –Selects goal-relevant activities, ranks them, allocates time, and prepares and follows schedules
B. *Money*—Uses or prepares budgets, makes forecasts, keeps records, and makes adjustments to meet objectives
C. *Material and Facilities*—Acquires, stores, allocates, and uses materials or space efficiently
D. *Human Resources*—Assesses skills and distributes work accordingly, evaluates performance and provides feedback

Interpersonal: Works with others

A. *Participates as Member of a Team*—contributes to group effort
B. *Teaches Others New Skills*
C. *Serves Clients/Customers*—works to satisfy customers' expectations
D. *Exercises Leadership*—communicates ideas to justify position, persuades and convinces others, responsibly challenges existing procedures and policies
E. *Negotiates*—works toward agreements involving exchange of resources, resolves divergent interests
F. *Works with Diversity*—works well with men and women from diverse backgrounds

Information: Acquires and uses information

A. *Acquires and Evaluates Information*
B. *Organizes and Maintains Information*
C. *Interprets and Communicates Information*
D. *Uses Computers to Process Information*

Systems: Understands complex inter-relationships

A. *Understands Systems*—knows how social, organizational, and technological systems work and operates effectively with them
B. *Monitors and Corrects Performance*—distinguishes trends, predicts impacts on system operations, diagnoses deviations in systems' performance and corrects malfunctions
C. *Improves or Designs Systems*—suggests modifications to existing systems and develops new or alternative systems to improve performance

Technology: Works with a variety of technologies

A. *Selects Technology*—chooses procedures, tools or equipment including computers and related technologies
B. *Applies Technology to Task*—Understands overall intent and proper procedures for setup and operation of equipment
C. *Maintains and Troubleshoots Equipment*—Prevents, identifies, or solves problems with equipment, including computers and other technologies

THE SECRETARY"S COMMISSION ON ACHIEVING NECESSARY SKILLS
U.S. DEPARTMENT OF LABOR
JUNE 1991

Elements of the Tech Prep Curriculum

WHAT IS TECH PREP?

Tech Prep is a course of study that:

- Parallels the current "college prep" programs
- Prepares students for technical careers
- Serves the two middle quartiles of the high school student body
- Blends the academic and technical competencies
- Focuses on applied learning situations
- Eliminates the gaps and barriers that may now exist
- Allows for a smooth transition from school to work
- Creates a better environment for earning, learning and living

THE 5 C'S OF TECH PREP

"The development of TPAD programs, which emphasizes five "Cs"--

- **Continuity** in learning,
- **Context-based** teaching (applied academics),
- **Competency-based** teaching,
- **Communication** between learning institutions,
- **Completion** of the program with a degree/diploma--

offers students another definition of educational excellence. It is true curricular reform."

CURRICULUM GUIDELINES

For a curriculum to qualify as TPAD it should:

- run parallel to - not replace - college prep/baccalaureate degree programs,
- build an advanced-skills technical education on a common foundation of math, science, communications, and social sciences,
- lead to an associate degree, vocational diploma or vocational certificate,
- incorporate relevant (real-life) applications of what is being taught--in other words, be built around applied academics,
- use a competency-based core curriculum structured around a career cluster of occupations, and
- provide employable skills at the conclusion of the high school portion, so that, if circumstances require, students can work while completing their associate degree.

Advanced Skills

Definition:

Skill-enhanced tech prep programs usually imply that the requirements for the diploma/degree have been raised; for example, high school tech prep graduates would be required to take a full two-year post-secondary program to earn an associate degree--the additional training/education would provide advanced skills. **Advanced** skill programs are advanced curriculum programs.

Characteristics:

Advanced skill programs:

- add more advanced training or education;
- eliminate course redundancy;
- graduate students with higher-level skills;
- provide maximum flexibility for students;
- accompany advanced placement programs;
- offer various exit options-career ladders.

Types:

Three types of **advanced skill** programs are:

1. More depth--Provide "more of the same"; i.e., offer a greater exposure to the field, a wider variety of skills, or more skills that build upon the skills that have been previously learned.
2. More breadth--Provide "cross training"; i.e., combine one specialization with another or merge two technologies.
3. Build upon a foundation--Provide a "foundation and then build on the foundation"; i.e., include applied academic courses while introducing the student to a technology.

TECH PREP

CURRICULUM DEVELOPMENT ISSUES

- **Secondary/Post-Secondary Integration**
- **Academic/Occupational Articulation**
- **Competency, Outcome-Based Curricula**
- **Applied Academics**
- **Core Abilities**
- **Functioning and Enabling Skills**
- **Enhanced Skill Programs**
- **Career Cluster Maps**
- **Bridge Programs**

WESTERN'S PROCEDURES FOR CURRICULUM DEVELOPMENT

- **Acquire DACUM studies, curricular resources, assessment data, etc.;**
- **Conduct WWTC faculty workshops/seminars on curriculum development;**
- **Participate in faculty exchanges, high school visits, state conferences, etc.;**
- **Develop competency-based, integrated course curricula;**
- **Design career cluster maps and marketing materials;**
- **Distribute and explain competencies and curricula materials at regional focus sessions;**
- **Sign articulation (advanced standing) and contractual (institutional credit) agreements.**

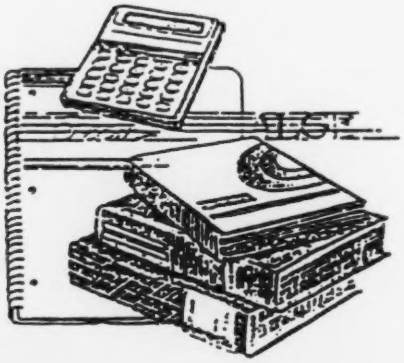
TECH PREP

CURRICULUM DEVELOPMENT

THE APPLIED ACADEMICS

THE APPLIED ACADEMIC RESOURCES
(PRODUCED BY CORD)

- ***High technical quality;***
- ***User friendly resource;***
- ***Pedagogical variety;***
- ***Context of application;***
- ***Bring workplace into classroom;***
- ***Match most students' learning style;***
- ***Utilize integrated, interdisciplinary approach;***
- ***Promote higher student achievement;***
- ***Available through CESA.***



THE APPLIED ACADEMICS

What Are Applied Academics?

Today, the advent of rapidly changing technologies, both at home and abroad, clearly signals the need for an educational system that combines the best in vocational and academic learning--that is, teaching academic foundation courses in an occupational setting. Such a strategy is generally referred to as applied academics. Applied Academics can be defined as the presentation of subject matter in a way that integrates a particular academic discipline (such as math, science, or English) with personal work-force applications (hands-on laboratories dealing with practical equipment and devices). The mathematics and science principles that are taught, for example, are related to and explained in terms of the operation of real devices and applications in the everyday work world.

The Secretary's Council on Achieving Necessary Skills (SCANS) report released earlier this summer concluded that:

> "The most effective way of teaching skills is "in context"--placing learning objectives within real environments rather than first insisting that students learn in the abstract what they will then be expected to apply."

The SCANS report also suggested that basic skills and problem-solving skills are not sequential, but mutually reinforcing and should be taught together. The SCANS report states that real know-how--foundation and competencies--cannot be taught in isolation, but rather that students need practice in application of their skills.

> "Choosing between teaching the foundation and the competencies is false; students usually become more proficient faster if they learn both simultaneously...Learning 'to know' must never be separated from learning 'to do.'"

Findings from cognitive research (how people learn) indicate that the most productive approaches to teaching are to provide learning opportunities that take the student from (1) concrete to abstract, (2) specific to general, (3) practice to theory, and (4) familiar to unfamiliar. The Applied Academics courses are designed to incorporate all of these findings and to meet the learning styles of the majority of our students.

Applied Academics are not "watered-down" courses. Applied Academics is a coordinated, sequential curriculum designed to be rigorous and challenging while adhering to certain standards of development. Applied Academics course material must make sense to both the college bound and the non-college bound student. The course material must be practical and relevant, related wherever possible to the real world of work. Delivery of the overall course material must emphasize and include hands-on learning experiences in laboratory environments. The integrity of the academic discipline must be retained with all presented course materials.

BEST COPY AVAILABLE

Why Do We Need Applied Academics Courses?

The complexity and rapid change of modern technology requires that all students have a solid foundation in mathematics, science, and communications. The content taught in these courses must be rigorous, however it must be taught in a manner that meets the learning styles of the majority of our students, not just the learning style of a few. No longer can we speak of the liberal arts versus the practical arts as if we live in two separate worlds. The worker of the future will need to understand both academic concepts as well as technical practices. Future changes in technology will leave behind students brimming with specific job skills but lacking an associated academic foundation. An understanding of basic mathematical and scientific concepts is critical to productive living and working in a technological society.

According to a policy statement by the Council of Chief State School Officers:

> "The labor force needs of this decade and the next century dictate that *all* workers--not just a small elite cohort--but workers at all levels must have well-developed abilities to learn easily and adapt to new circumstances on the job; to read complex materials, understand, and apply them; to use quantitative skills appropriately; to apply tools of production and management; to speak and write effectively; to work cooperatively as members of a team; and to undergo retraining, perhaps repeatedly."

Applied Academics are designed to address the fundamental principles of productivity, teamwork, and flexibility.

Who Is The Target Audience For Applied Academics?

The Applied Academics courses target students in the two middle quartiles of the average high-school population. General education students--often referred to as the "forgotten half"--are not usually headed for a four-year degree program at a university. Students in the middle two quartiles of an average graduating class may go to work immediately after high school or pursue technical careers requiring two years or less of postsecondary education. If our work force is to be competitive in the world market, however, these students also need a strong background in science, math, and communications. Educators have discovered, however, that the learning styles of the "forgotten half" cannot be met by requiring them to earn more credits in traditional academic courses.

Applied Academics courses emphasize the application of mathematical, scientific, and communication principles to the real world and involve the students in hands-on learning. Before coming to high school, many students have developed a certain anxiety towards traditional math and science courses. By being exposed to science in an applied manner, and learning that they are capable of comprehending the material, students are much more likely to take higher level mathematics and science courses in the future.

Description of Courses

Applied Mathematics

Applied Mathematics is a two-year, high-school mathematics course based on an integrated presentation of topics in arithmetic, algebra, geometry, trigonometry, probability, estimation, problem solving, and statistical process control. Applied Math is oriented toward application and practice of mathematical concepts and skills, and practical world-of-work problems that involve extensive measurement and problem-solving activities in health occupations, home economics, agriculture/agribusiness, industrial technology, and business/marketing. Ideally, students should begin Applied Mathematics I in the ninth grade and complete Applied Mathematics II in the tenth grade. This then prepares them for entry into Algebra Two if their high school program calls for higher level mathematics courses. Applied Mathematics is being taught in forty-four states to over eighty thousand students.

Principles of Technology

Principles of Technology is a two-year, high-school course in applied physics for students interested in technical careers. The PT curriculum is designed to be taught in either comprehensive high schools or vocational-technical centers to tenth and eleventh grade students who may or may not be planning to enroll in four-year colleges and universities in engineering or science programs. The PT curriculum consists of fourteen units (two years) such as force, energy, power, energy converters, transducers and radiation. Students who complete Applied Math I in the ninth grade can begin PT in the tenth grade with a high level of success. If time permits, a second year of PT may then be taken in the eleventh or twelfth grade. Principles of Technology is currently being taught in forty-eight states and two Canadian provinces to over one-hundred thousand students.

Applied Biology/Chemistry

Applied Biology/Chemistry is an integrated, two-year course of competency-based materials that can be infused into existing courses or taught as a stand-alone course. The ABC course presents biology and chemistry in the context of work, home, society, and the environment. The applied academic approach treats biology and chemistry as a unified science, just as the two subjects are most often found in real life experiences. The ABC curriculum consists of twelve units including Natural Resources, Nutrition, Plant Growth and Reproduction, Disease and Wellness and Microorganisms. ABC should be taught at the ninth and/or tenth grade level. Applied Biology/Chemistry, the newest of the Applied Academics courses, is being taught in thirty-eight states for the first time during the 1991-92 school year.

Applied Communications

Applied Communication is a comprehensive set of video-based learning materials designed to help students develop and refine job-related communications skills. The fifteen units in Applied Communication cover areas such as Communicating in the Work Place, Using Problem Solving Techniques, Participating in Groups, and Upgrading, Retraining, and Changing Jobs. Of the forty-six states now using Applied Communications, many are trying the one-year course at different grade levels, and some are infusing Applied Communications into English courses during all four high-school years.

All of the existing applied academics courses consist of student text with lab activities, video, a teacher's guide, a bank of test questions, and a resource guidebook. The applied academics courses are written generally at an eighth grade reading level.

Who Benefits From These Courses?

Everyone benefits when applied academic courses are carefully implemented and used as a foundation for a Tech Prep curriculum.

For students, applied academics builds a solid foundation of math, science, and communications principles while providing a broad knowledge base that ensures flexibility in a changing work force. Applied academics also make science, math, and communication courses more accessible and less threatening to a large majority of learners and may create a heightened interest in pursuing technical postsecondary study.

For educators, teaching applied math, science, and communications becomes a more successful and enjoyable experience that not only relates the academic principles to the practical world of business and industry, but bridges the gap between the vocational/technical and academic sides of the "house."

Applied academics benefit local employers by raising the level of mathematic, science, and communications skills for entering workers and providing a work force that can easily adapt to changes in that work place. Applied academics also provide opportunities for new and closer partnerships between education and industry.

APPLIED ACADEMICS

First Year

- Force
- Work
- Rate
- Resistance
- Energy
- Power
- Force Transformers

Second Year

- Momentum
- Waves
- Energy Convertors
- Transducers
- Radiation
- Optical Systems
- Time Constants

Figure 1: Principles of Technology Units

Applied Mathematics I

A. Getting to Know Your Calculator
B. Naming Numbers in Different Ways
C. Finding Answers with Your Calculator
1. Learning Problem-solving Techniques
2. Estimating Answers
3. Measuring in English and Metric Units
4. Using Graphs, Charts, and Tables
5. Dealing with Data
6. Working with Lines and Angles
7. Working with Shapes in Two Dimensions
8. Working with Shapes in Three Dimensions
9. Using Ratios and Proportions
10. Working with Scale Drawings
11. Using Signed Numbers and Vectors
12. Using Scientific Notation
13. Precision, Accuracy, and Tolerance
14. Solving Problems with Powers and Roots
15. Using Formulas to Solve Problems

Applied Mathematics II

16. Solving Problems That Involve Linear Equations
17. Graphing Data
18. Solving Problems That Involve Nonlinear Equations
19. Working with Statistics
20. Working with Probabilities
21. Using Right-triangle Relationships
22. Using Trigonometric Functions
23. Factoring
24. Patterns and Functions
25. Quadratics
26. Systems of Equations
27. Inequalities
28. Geometry in the Workplace 1
29. Geometry in the Workplace 2
30. Solving Problems with Computer Spreadsheets
31. Solving Problems with Computer Graphics
32. Quality Assurance and Process Control 1
33. Quality Assurance and Process Control 2

Figure 2: Learning Modules for Applied Mathematics

Communicating in the Workplace
Gathering and Using Information in the Workplace
Using Problem-Solving Strategies
Starting a New Job
Communicating with Co-Workers
Participating in Groups
Following and Giving Directions
Communicating with Supervisors
Presenting Your Point of View
Communicating with Clients and Customers
Making and Responding to Requests
Communicating to Solve Interpersonal Conflicts
Evaluating Performance
Upgrading, Retraining, and Changing Jobs
Improving the Quality of Communications

Figure 3: Learning Modules for Applied Communication

Natural Resources
Water
Air and Other Gases
Plant Growth and Reproduction
Continuity of Life
Nutrition
Disease and Wellness
Life Processes
Synthetic Materials
Waste and Waste Management
Microorganisms
Community of Life

Figure 4: Learning Modules for Applied Biology/Chemistry

	9th Grade	10th Grade	11th Grade	12th Grade
MATH	Applied Math I	Applied Math II	Algebra II	Formal Geometry
SCIENCE	Applied Biology/ Chemistry	Principles of Technology I	Principles of Technology II (Optional)	
ENGLISH	English I, II, and III and Applied Communication			
SOCIAL STUDIES	Geography, History, and Government			
OTHER			Vocational Education Concentration	Vocational Education Concentration

Figure 5: Applied Academics in a Four-Year High-School Program

TECH PREP

CURRICULUM DEVELOPMENT

CAREER CLUSTER MAPPING

CAREER CLUSTER MAP

A Tech Prep curriculum resource designed to build stronger foundations, provide opportunites for student choice and increase competency levels. Cluster maps are a resource for career counseling to foster career decision making.

ADVANTAGES OF CAREER CLUSTER MAPPING

- Demonstrates course scope and sequence
- Provides resource for career counseling
- Assists in student career decision-making
- Identifies courses for possible articulation
- Illustrates university prep and tech prep similarities
- Provides for individual needs

CUSTOMIZING YOUR CLUSTER MAPS

- *Modify curricular requirements*
- *Substitute specific course titles*
- *Add/delete specific courses offered*
- *Adapt courses to appropriate grade level*
- *Advocate adoption of applied academics*
- *Highlight a specific program of study*
- *Identify articulated courses*

WESTERN WISCONSIN TECHNICAL COLLEGE
304 North Sixth Street
La Crosse, WI 54602-0908

Career Clusters: Business

1. **Business Administration:**
   - Accounting (A.D.)
   - Business Administration-Personnel (A.D.)
   - Finance (A.D.)
   - Paralegal (A.D.)
   - Supervisory Management (A.D.)*
2. **Computer Information Systems:**
   - Microcomputer Specialist (A.D.)
   - Programmer/Analyst (A.D.)
   - Office Computer Specialist (V.D.)
3. **Marketing:**
   - Fashion Merchandising (A.D.)
   - Marketing (A.D.)
   - Retail Marketing (A.D.)
4. **Office Technologies:**
   - Administrative Assistant-Information Processing (A.D.)
   - Medical Secretary (A.D.)
   - Legal Secretary (A.D.)
   - Office Assistant (V.D.)

Career Clusters: Home Economics

5. **Child and Adult Care Services:**
   - Child Care and Development (A.D.)
   - Community Development Disabilities Associate (A.D.)
6. **Interior Design:**
   - Interior Design
7. **Food Service and Production:**
   - Food Service Management (A.D.)
   - Food Production Specialist (V.D.)

KEY: (A.D.) Associate Degree
(V.D.) Vocational Diploma
(V.C.) Vocational Certificate

Career Clusters: Human Services

8. **Diagnostic and Therapeutic Health Services:**
   - Dental Hygiene (A.D.)
   - Electroneurodiagnostic Technology (A.D.)
   - Medical Laboratory Technician (A.D.)
   - Physical Therapist Assistant (A.D.)
   - Radiography (A.D.)
   - Respiratory Care Practitioner (A.D.)
9. **Health Care Administrative Services:**
   - Medical Record Technician (A.D.)
   - Central Service Technician (V.D.)
   - Health Unit Coordinator (V.D.)
10. **Health Care Support Services:**
    - Dental Assistant (V.D.)
    - Medical Assistant (V.D.)
    - Surgical Technician (V.D.)
11. **Nursing:**
    - Associate Degree Nursing-RN (A.D.)
    - Homemaker/Home Health Aide (V.C.)
    - Nursing Assistant (V.C.)
    - Practical Nursing (V.D.)
12. **Public Safety Services:**
    - Protective Services (A.D.)
    - Emergency Medical Technician (V.C.)
    - Police Basic Training (V.C.)

Career Clusters: Industrial Technologies

13. **Agriculture**
    - Agribusiness and Science Technology (A.D.)
    - Farm Business and Production Management (V.D.)*
14. **Construction:**
    - Air-Conditioning (A.D.)
    - Fabrication Welding (V.D.)
    - Refrigeration Servicing (V.D.)
    - Welding (V.D.)
    - Wood Technics (V.D.)

15. **Electronics:**
    - Biomedical Electronics (A.D.)
    - Electromechanical Technology (A.D.)
    - Electronics (A.D.)
    - Electronic Servicing (V.D.)

16. **Graphics/Printing:**
    - Commercial Art (A.D.)
    - Printing and Publishing (Electronic Publishing) (A.D.)
    - Visual Communication (A.D.)
    - Printing (V.D.)

17. **Manufacturing:**
    - Industrial Engineering Technician (A.D.)*
    - Mechanical Design Technician (A.D.)
    - Quality Assurance Technician (A.D.)*
    - Machine Tooling Technics (V.D.)
    - Machine Tool Operation (V.D.)

18. **Transportation:**
    - Auto Body and Paint Technician (V.D.)
    - Automotive Technician (V.D.)
    - Diesel and Heavy Equipment Technician (V.D.)

*Students are generally employed while enrolled in this program

WESTERN WISCONSIN TECHNICAL COLLEGE

Name: ______________________ School: ______________________

Cluster: ______________________ Date: ______________________

CAREER CLUSTER MAP

YEAR	ENGLISH	SCIENCE	MATH	SOCIAL SCIENCE	OTHER	OCCUPATIONAL RELATED
12						
11						
10						
9						

☐ Number of years required in each academic area by the Department of Public Instruction

TECH PREP

STRATEGIC PLAN

GRANT ACTIVITIES

1992-93 Grant Goals & Objectives

GOAL 1: Jointly develop a comprehensive, competency-based, coordinated business and industrial technologies curricula that will begin in the 11th and 12th grades in high school and continue through two years of technology programs at Western Wisconsin Technical College and other technical colleges in Wisconsin

Objective 1.1: Utilize the DACUM process to jointly develop core courses for five industrial technology cluster areas of:
*Manufacturing,
*Graphics,
*Electronics,
*Construction/Transportation, and
*Agribusiness

Objective 1.2: Through five focus groups, with instructional and administrative representatives from WWTC and participating high school, integrate competencies for eight industrial technology courses, resulting in articulation/contractual agreements.

Objective 1.3: Through individual school follow-up sessions, finalize integration of the eight industrial technology course competencies into the participating high school curricula.

Objective 1.4: Determine all materials and curricula are bias free through a formal review by specialists outside of the Tech Prep process.

GOAL 2: Recruit, assess, advise and monitor tech prep students using bias-free resource and marketing materials to all intended target markets.

Objective 2.1: Through the second annual Tech Prep Banquet for area business, industry, labor and WWTC/high school staff, recruit ten business/industry representatives (two from each cluster area) to participate in the Tech Prep process.

Objective 2.2: To have in place a marketing plan for tech Plan.

Objective 2.3: To have in place "Career Exploration" courses at five participating high schools.

Objective 2.4: To have in place recruitment strategies for minority and special populations.

Objective 2.5: To have in place assessment and evaluation mechanisms for Tech Prep students.

GOAL 3: Develop the staff (extra allocation.)

Objective 3.1: To have in place an exchange program for faculty between educational and/or industrial sites for a "day" to establish an understanding between secondary and postsecondary institutions as well as business/industry.

Objective 3.2: To increase the knowledge base of 100 faculty/administration from both systems on Tech Prep and curriculum development.

Objective 3.3: Through a "special needs" workshop for 25 staff of both systems, ensure awareness/sensitivity to the barriers and needs of special populations.

Objective 3.4: Participate in statewide workshops and in-services.

Objective 3.5: To have in place training program(s) for high school instructors which will enhance the articulation process.

GOAL 4: Establish the administrative procedures and planning mechanisms that will facilitate the process of granting advanced standing/institutional credit in the business area at WWTC for implementing 2 + 2 agreements.

Objective 4.1: To have in place a three-year strategic plan, board policies, and committee structure for Tech Prep.

Objective 4.2: To increase the time available for technical assistance in curriculum development by 100 percent.

Objective 4.3: Increase the number of articulation/contractual agreements signed with area schools for a total of 40.

WISCONSIN
TECH PREP
WHY, WHAT, HOW, WHO, WHEN
Questions and Responses

WHY

1. What events led up to the development of this program? (Why do we need this program?)

Educators and business people alike must face the fact that a new set of competitive standards is emerging in the global marketplace. Around the world, successful managers are learning that competing on price alone is not enough. Instead, they are positioning their firms to compete more effectively for customers who value quality, variety, customization, convenience, and timeliness.

Many employers in Wisconsin and across the country have begun to adopt new strategies to compete on this high end of the international market. These employers are beginning to create a high skills/high wage economy for the state. As they do so, these innovative employers are experiencing real skill shortages and expressing concerns about the growing education and training needs of their workforce.

About a year ago, the Governor's Commission for a Quality Workforce surveyed employers across the state. These employers documented:

- An ever-widening gap between the needs of business and industry in Wisconsin for highly skilled employees and the shrinking pool of available skilled workers that threatens to stall increased productivity across key sectors of the state's economy;
- The lack of real partnerships and communication between educators and the business and labor community, both at the secondary and the technical college level, regarding the types of skills needed in the changing marketplace;
- The need to improve basic skills of the existing workforce and to improve the educational performance of the workers of tomorrow;
- The importance of helping students to identify career goals, whether for technical or professional employment, and of providing clear pathways to pursue the education and training needed to reach these goals.

Tech Prep is really a market-driven concept. Business and industry need more highly skilled workers, and to compete successfully for the higher skill jobs being created, young people need to leave school with better entry-level job skills. More of them need to be better prepared to enter technical college to be able to obtain the skills and knowledge they will need to succeed in the workplace without extensive remediation. Many more young people must also to be better prepared to engage in the lifelong learning. Our workforce will need to engage in continually upgrade their skills and knowledge in the workplace. Many Wisconsin employers are looking to the kinds of ideas embodied in Tech Prep as the best way to obtain their desired outcome--a more highly skilled and educated workforce for Wisconsin.

2. What efforts are being made to develop a transition between the technical colleges and the four-year programs?

Policy makers in Wisconsin have long agreed that the primary mission of the Technical College System is to provide occupational education and training needed for entry-level and technical occupations. The Technical College System is not set up nor expected to be a community college system with a significant baccalaureate transfer function. Indications are that fewer than two hundred technical associate degree college students actually transfer from the Technical College System to the UW each year. This does not include the VTAE college parallel transfer student. The UW System Administration 'Central DataBase' (CDB) report on all transfer students during the most recent six academic years: 1985-86 to 1990-91 indicated of the 78,977 transfer students in the UW System over the six year period, 7,606 (9.6%) transfers entered from the VTAE System. Of this total, 6424 students transferred credit from one of the college parallel institutions -- Madison (2,978-39.2%), Milwaukee (3,058-40.2%), and Nicolet (388-5.1%). Of the VTAE districts not offering college parallel, Chippewa Valley transferred the most students over the six year period (293), followed by Northeast (107).

Nevertheless, as people seek to advance in their careers or change their educational goals, ease of transfer from one educational system to another becomes an important personal issue. Therefore:

- The leadership of the Technical College System and the UW System have been working together for more nearly three years to improve the transferability between the two systems.
- The UW Board of Regents rescinded their longstanding policy barring transfer of general education courses.
- Technical college staff have worked extensively with UW staff to develop program articulation agreements for students who complete technical college associate degree programs.
- The two systems also have on-going arrangements through joint standing committees to monitor progress on credit transfer issues.
- Three technical college campuses continue to offer small liberal arts transfer programs.

3. How is the Tech Prep program different from other high school articulation programs?

In the past, high school articulation agreements have been developed on a course to course basis. The Tech Prep concept goes beyond individual courses by infusing applied academics throughout the high school curriculum. Tech Prep is aimed at providing students with a coherent set of courses, activities, and experiences designed for the individual student that will help them develop the competencies they need to succeed in making the transition from school to work. Successful implementation of Tech Prep will benefit students whether they go to work directly out of high school, seek further education and training from the Technical College System, or attend a four-year baccalaureate institution.

WHAT

4. What are the main goals of this program?

The main goals of Tech Prep are to ensure that students leave school with the skills, knowledge, and attitudes they need to succeed in a high skills/high wage economy and to participate fully as members of their community.

5. How does this tie in with Education for Employment?

The Education for Employment Standard is the basic framework blocks for improving the school-to-work transition in Wisconsin. Tech Prep, along with school-supervised work experience, and the Wisconsin Developmental Guidance Model are the means that public policy makers in Wisconsin have identified as the means for improving the school-to-work transition for all students.

6. How will Tech Prep prepare students for technical schools any differently than present programs?

A central focus of the Tech Prep concept is outcome-based education, where the desired outcomes are defined by mastery of competencies grounded in the realities of business and industry. Progress in Tech Prep is measured by the student's ability to demonstrate these competencies. By doing so and by following a coherent sequence of courses, students will be assured of meeting the prerequisites for programs upon entering technical college.

7. How will the Tech Prep course, which begins in the high school and transfers to the VTAE system, then transfer to the 4-year college?

First, it is important to realize that Tech Prep is not a course, but a coherent set of courses, activities, and experiences. Tech Prep should better prepare high school students for the rigors of any postsecondary programs and ensure young people leave high school with the skills, knowledge, and attitudes they need to obtain entry-level employment.

The reality is that most students will never attend a four-year college. If they do, nearly one-half will drop out of the four-year program prior to graduation. Nevertheless, we need to provide through Tech Prep options that will make it possible for students to make any of a number of real life choices that they may face. These include:

- entering the labor force directly out of high school
- entering technical college directly out of high school
- entering a four-year college directly out of high school

While it is not the primary goal of the Tech Prep program to prepare students for four-year programs, some students may choose to continue their postsecondary studies after completing a two-year program at the technical college. It is for these students, that the technical college/UW transfers arrangements must continue to be an improved option.

8. What will the requirements be to enter a technical college especially for a small high school? How will the requirements or prerequisites be handled if they do not match?

The strength of Wisconsin's Technical College System is that it is designed to take students from where they are and help them to obtain the skills, knowledge, and attitudes they need to meet their educational goals. That will not change under Tech Prep. The technical colleges will maintain their open admissions policies and will continue to serve students regardless of their prior level of educational attainment.

Just as now, courses and programs in the technical colleges will continue to have prerequisites. Advanced standing and remediation will be decided on a case-by-case basis. The hope is that by implementing Tech Prep, young people entering the technical college will be better prepared for the program they wish to pursue, that they will need to spend less time making up for deficiencies in their high school education, and that the number of students entering remediation programs will drop substantially.

9. Show us a sample Tech Prep program and describe how it works.

Over the past year, DPI and the Technical College System have been sponsoring seven Tech Prep initiatives around the state. A statewide coordinating group headed up by staff from the UW-Madison Vocational Studies Center. The "Tech Prep Effective Practices Guide" being produced by this group will contain sample curricula from these projects.

Curriculum materials are also available from individual school districts in other states and from national consortia.

10. How does Tech Prep differ from "tracking"?

The traditional secondary school setting has best served students bound for a four-year college or university. While many Wisconsin high school students seek a four-year degree, 70 percent will neither attend college nor complete their studies if they do enter university. We need to restructure the high school curriculum to provide more focussed learning experienced for all students.

In restructuring the high school curriculum, we need to place it along a continuum running from K-12 to the university. Wisconsin, unlike many states, has a strong technical college system. Preparing new workers for technical and entry-level positions is a central mission of the Technical College System. What is missing is a strong link between the technical colleges and the kinds of schooling offered in the state's secondary schools. We need to design and put in place a new high school curriculum to prepare high school students for technical education in the way that students are now prepared for baccalaureate education.

Second, Tech Prep would enable high school graduates to make a successful transition to postsecondary education or to work. As it is evolving in Wisconsin, Tech Prep combines a common core of applied academic and technical courses at the high school level. Through integrated curricula in broad occupational areas, students acquire higher level basic and pre-technical skills needed in the workforce and for further technical education.

In short, Tech Prep does not close off options for students the way a rigid tracking system would. Instead, it opens up options for students by providing with a stronger foundation in the basic skills, knowledge, and attitudes they will need to succeed in the workforce or in postsecondary education.

HOW

11. How can we use the labor market information to help us select Tech Prep programs and to adjust to the changing labor market needs?

Labor market information helps to inform educators about the environment. It provides a snapshot of the kinds of industries and occupations available in a community and it can be used to indicate trends in industrial and occupational change in an area.

Educational planning, however, is like shooting at a moving target. If educators plan and implement particular educational programs only on the basis of current information and past trends, they will probably miss the mark. By the time the programs are implemented and students pass through them, the specific skill needs of employers in a local labor market may have changed radically.

Instead, labor market information should be used to get an idea of the current situation, to gage where it is going, and to identify major players in the local or state economy who can be included in the on-going planning and evaluation of educational programming in the community. While it will continue to be important to reassess the overall labor market from time to time, much of the information educators will need to guide occupational programming should come from the active involvement of business and industry in the advising and participating in the high school programs.

12. What are some ways that the technical colleges and high schools can work together to educate students better and more efficiently?

The results of the seven Wisconsin Tech Prep pilot projects provide excellent examples of the different ways that the technical colleges and high schools can work together. The State Office and DPI will be working together to get this information out to the K-12 districts and the technical colleges in a "Tech Prep Effective Practices Guide." Some examples include:

developing a coherent curriculum that leads students from the middle school years through high school and into technical college;

identifying together how K-12 and technical college resources can be used to compliment each others activities; and

working jointly with representatives from business, industry, labor, and the community at large to identify competencies students need to master.

13. How much curriculum revision is needed? Will new curriculum need to be developed?

To be honest, a lot of curriculum revision is needed, but probably not as much effort will be required as that implies. Much work has already been done across the nation and in Wisconsin in developing specific course work in applied academics. In the curriculum development area, more effort will be needed in sharing these resources, in aligning and integrating these existing materials into a unified whole, and in increasing the familiarity of instructional staff with the techniques and curriculum, than in creating wholly new courses.

14. Whose course will it be?

Again, Tech Prep is not a course or program, but a redesign and realignment of the high school curriculum to improve the school-to-work transition. Identifying and sorting out the specific courses to be offered through Tech Prep in a particular setting will require the development of close working relationships between technical college staff and high school staff. It is simply not possible to identify outside of a specific context which courses will be technical college courses and which will be high school courses.

15. What changes are needed in the areas of social studies, math, English and science?

Tech Prep probably cannot succeed if it is seen as solely the domain of vocational educators. Meeting the challenges Tech Prep is designed to address requires nothing less than the redesign of a significant portion of the high school curriculum. In fact, once Tech Prep begins to be implemented in any significant way, many more educators will begin to understand that these challenges require a restructuring of the entire educational system (K-12 through university), not just the high school portion of the continuum.

At a minimum, Tech Prep cannot succeed in Wisconsin without extensive involvement and cross-fertilization of ideas from vocational teachers and those in general education. In many cases, general education course work will need to be realigned to emphasize competency-based outcomes. It will need to adopt an applied academic focus. Tech Prep concerns, including career education and Education for Employment activities must be infused across the entire high school curriculum. Finally, general education teachers from K-12, the technical colleges, and the university will also need to identify the skill levels and competencies that students will need to succeed in the more advanced portions of the Tech Prep curriculum.

16. What will be the specific articulation arrangements or advanced standing agreement?

We need to recognize that Tech Prep is just starting to get off the ground in Wisconsin. The pilot projects funded last year and the previous outstanding articulation efforts have involved only a few school districts and technical colleges. As of now, no one single kind of arrangements have been worked out between the K-12 districts and the VTAE districts. Also, successful implementation may require not one single model, but a variety of approaches designed to meet local needs. Over time, details of this sort will have to be worked out as part of the implementation process in each VTAE district.

It is important to recognize that it will be but one part of the overall implementation of Tech Prep. Significant progress towards implementing the Tech Prep concept--developing sequences of applied academics course work, expanding school-supervised work-based learning experiences, and increasing exposure to career education activities--can be made without even addressing issues such as course work articulation or advanced standing.

17. Will high school students be able to attend the technical school while still a high school student in order to prepare for a course/program the high school is unable to offer? (technology, calculus, etc.)

Yes. In the most recent state budget bill, statutory changes were enacted that ensure high school students the right to attend technical college to take whatever courses they are qualified to take.

18. What are the costs involved for each school district?

Lets think for a minute about the costs of not implementing Tech Prep in our communities: diminished global and national competitiveness, shrinking markets, reduced investment in productive capacity, and fewer high paying jobs in Wisconsin.

From the point of view of a business person, these are opportunity costs and say that we cannot afford not to implement Tech Prep across our state.

Honestly, we do not know what Tech Prep will cost to implement in each school district. There is some federal funding available to start planning for Tech Prep in Wisconsin. But before we begin asking for more dollars, we need to think in terms of reallocating and redirecting existing dollars and resources to transforming the way we do business in the hundreds of high schools across Wisconsin.

WHO

19. "What's in it for me?" (Teachers point of view.)

No profession can afford to ignore the many changes in technology and demographics that challenge our society. Business cannot afford to do that, and you cannot afford to do it in the technical colleges or the K-12 system. If we are to succeed, as you know we must, we must be willing to embrace change in these exciting times.

From our point of view, the benefits of Tech Prep to teachers are manifold:

- A chance to reshape public education in Wisconsin
- Better prepared students
- More motivated students
- Increased credibility with business and industry and in the larger community
- Less isolation as a result of increased collegial connections across instructional and institutional lines and with business and industry.

20. How does the role of the guidance counselor change in the Tech Prep program?

For Tech Prep to succeed, Wisconsin's Developmental Guidance Model with their emphasis on involving parents and students in identifying educational goals and planning appropriate educational experiences for each child must be interwoven into the role of every guidance counselor in Wisconsin.

Counselors must become agents for change in the high school, working with instructional staff to infuse career awareness activities and experiences throughout the curriculum.

Counselors must work with the rest of the community to help to change attitudes and to raise educational expectations for all students.

Counselors must also work with other school personnel to help students make appropriate educational choices for their own school to work transition.

21. How can the Tech Prep program be communicated to parents?

Parents need to be continuously involved with teachers and with their own children in helping to identify educational goals and to assess the appropriateness of the educational programming their children experience. Communication with parents about Tech Prep must not be a one-time event which occurs at the beginning of high school or in planning for 11th and 12th grades, but part of the on-going development of pupil profiles and future planning required by the Wisconsin Developmental Guidance Model.

Tech Prep must be promoted to parents and young people, but for Tech Prep implementation to be successful, parents, students, educators, and the community at large must begin to think of Tech Prep as part of a total redesign of the high school curriculum. They must also be shown how Tech Prep fits into this new curriculum and what benefits it offers to young people and to the community as a whole.

22. What role should business play in the role of Tech Prep planning?

Tech Prep and the redesign of the high school curriculum that it entails is clearly an education issue. But educators can only succeed in improving the outcomes of the educational system for all young people if they actively involve people from all segments of their community including business and industry.

People from business and industry have a number of important roles to play in the Tech Prep planning process. These include:

- Participating on advisory committees to assist in competency identification, curriculum development, and evaluation;
- Serving as an advocate for the educational enterprise, even to the extent of challenging educators and students to higher levels of performance;
- Providing access to resources in the broadest sense, not just donating equipment, but providing, for example, expertise in the classroom, mentors for individual students and teachers, professional growth opportunities to teachers and administrators, and career awareness and work experiences to students.

23. Who will teach the Tech Prep course? What about certification?

Certification for instructors involved in new courses will evolve as Tech Prep is implemented in the state. Because Tech Prep is part of an overall redesign of the high school curriculum, key to its implementation is the development of professional development plans for all instructional, guidance, and administrative staff in the high schools and many of their counterparts in the technical colleges.

Certification requirements for Tech Prep must be based on the changing skills and knowledge needed to successfully implement and offer applied academics courses and technical instruction relevant to broad occupational clusters. Certification requirements will need to be designed not to keep people out of positions, but to indicate directions for professional growth and experiences needed to offer quality programming.

24. Are high school students mature enough to deal with concepts presented in the specific course being offered? (esp. in Social Studies and Communication Skills)

In our opinion, maturity is not the issue. The real issue is can high school students master the competencies that are expected to be demonstrated in a particular subject area. The answer is that many current high school students might not be ready for these courses today.

Tech Prep will fail if we try to implement it as a change that only affects the last two years of the high school curriculum. A major premise behind Tech Prep is that we must raise our expectations of young people and we must improve the core abilities that they develop prior to the last two years of high school. These core abilities that must be developed through the K-10 years of schooling include:

- better basic skills
- learning effectively
- working productively
- communicating effectively
- working cooperatively.

25. What role does the state intend to play in the education of local boards of education, local administrators, businesses, etc. to bring about the needed changes.

Leaders in both DPI and the Technical College System must play multiple roles to bring about the needed changes in our high schools. Foremost among these is that of providing a vision of what educational reform means in Wisconsin and of reaffirming the state's longstanding commitment to investing in our most important resource--the skills and knowledge of the people of Wisconsin.

WHEN

26. When will Tech Prep become a "standard" for high school programming?

In the most recent state budget bill, statutory changes were enacted that require every high school in Wisconsin to implement Tech Prep. No timeline was given in the legislation, but technical colleges were required to begin setting up Tech Prep councils that include representatives from every high school in their respective VTAE district.

It is important to emphasize that Tech Prep is not a standard, but a statutory requirement beginning July 1, 1991.

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Revision #3, October 30, 1991

Tech Prep:

Practical Education for America's Work Force

By Dan Hull

IN contrast to the practical educational systems of Europe and Japan, American schools have failed to provide for students who are not college bound, developing no technical or apprenticeship programs that appropriately mix learning and work. According to Anthony Carnevale, a chief economist and vice-president of national affairs for the American Society for Training and Development:

> American schooling sequesters students from the real world, breaks knowledge down artificially into theoretical disciplines, breaks disciplines down into component pieces, and demands that students commit fragments of knowledge to memory. Applications are reserved for pen-and-paper exercises at the back of the chapter. Interdisciplinary applications are rare, and applications in the context of working groups are even more rare.

Who are at-risk students?

Vocational and technical education for years has been responsive to employers' specific needs. Generally, training concentrates on teaching about tools and techniques for specific tasks. Many students, however, enter and leave vocational education programs with poor academic skills; few achieve the academic foundation needed in a fast-changing technological society. Apt and teachable students who find the classic baccalaureate curriculum a waste of time and effort and vocational education ineffective in preparing them for technically elite jobs fall through the cracks in our education system. This group, at least 50 percent of students, has been labeled "the neglected majority." At a time when competition from abroad demands high performance in our work force, "more than half our young people leave school without the knowledge or foundation required to find and hold a job," according to *What Work Requires of Schools*, a June 1991 report from the Department of Labor.

In a typical high school, about a third of students are seriously preparing to enter baccalaureate programs. Their program of study, often known as college prep/baccalaureate degree, prepares them for professional or semiprofessional careers. Another fourth of students, because of interest or need, will complete their formal education before or at graduation from high school and immediately enter the work force. This group needs a well-designed, appropriately structured vocational education program.

> **"Apt and teachable students who find the classic baccalaureate curriculum a waste of time and effort and vocational education ineffective in preparing them for technically elite jobs fall through the cracks in our education system."**

The remaining high school students enroll in an unfocused program usually called general education. Most often, unfortunately, this curriculum fails either to engage students' interest or to prepare them adequately for work or ongoing education. This group represents the two middle quartiles of a typical high school population—in other words, the "average" student—and represents an untapped potential for enabling our country to regain its competitive edge in world markets.

Many such students perform poorly in school because they do not learn well in the abstract; they are "hands-on" learners. Findings from cognitive research indicate that the most productive approaches to teaching provide learning opportunities that take the student from (1) concrete to abstract, (2) specific to general, (3) practice to theory, and (4) familiar to unfamiliar. A curriculum of applied academics incorporates these concepts and makes learning understandable, achievable, and attractive for hands-on learners.

How will tech prep help?

The Carl D. Perkins Vocational and Applied Technology Education Act of 1990 provides for a tech prep program that attempts to make high school education more relevant for at-risk students. Tech prep links high school curriculum with the curriculum of a two-year community or technical college to produce skilled technicians capable of high productivity. This reform movement focuses on the "average" students who make up the middle 50 percent of our high school population.

The applied academics curriculum for the tech prep/associate degree program is a careful balance of "head skill" and "hand skill" which runs parallel to the college prep/baccalaureate degree program. It presents the rigorous body of knowledge in a hands-on setting and relates it to personal or social situations relevant to the workplace. The program tolerates no "watered down" courses but maintains the same academic integrity as the college prep curriculum.

Realizing that basic job training alone will not prepare students to keep pace with emerging and changing technologies, the Perkins Act expands vocational education to include total academic development. Applied academics in math, science, and communications form a foundation of knowledge, a core curriculum, which will help tech-prep students understand complex technologies and new skill requirements in the work environment. Regardless of the field, most jobs that offer growth,

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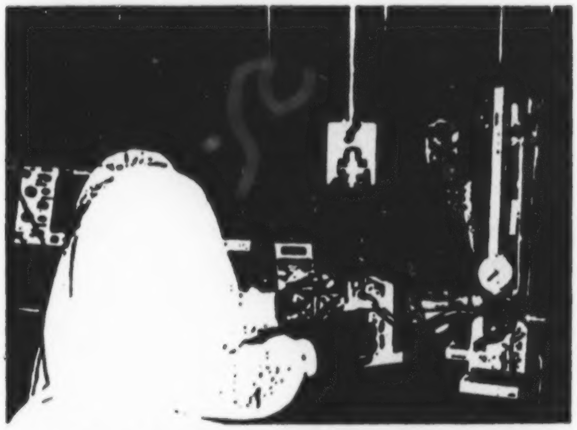
challenge, and earning potential require a working knowledge of math, technical principles, and communications skills. Well-educated workers can transfer their knowledge of basic principles, concepts, and technologies to practical applications in a variety of technical jobs. Additional training by an employer to prepare workers for new technology will be cut to a minimum.

What is articulation? In addition to integrating academic and vocational subjects, the tech prep program places heavy emphasis on articulation from secondary to postsecondary education. A clear, comprehensive, meaningful description of articulation presents it as a process, an attitude, and a goal:

As a *process*, articulation is coordination of policies and practices among sectors of the education system to produce a smooth flow of students from one sector to another. As an *attitude*, it is the willingness of educators in all sectors to work together to transcend the individual and institutional self-interest that impedes maximum development of the student. As a *goal*, it is the creation of an educational system without artificial divisions, so that the whole educational period becomes one unbroken flow, which varies in speed for each individual, and which eliminates loss of credit, delays, and unnecessary duplication of effort.



Tech prep students work in an energy conversion lab at Douglas Byrd High School, Fayetteville, N.C.

Articulation between high school and community or technical colleges, generally referred to as a 2 + 2 program, is a competency-based, technical-vocational curriculum, designed jointly by business, secondary schools, and postsecondary institutions, to link the last two years of high school with the first two years of postsecondary education to allow teaching of competencies not possible in only two years. A common core curriculum for tech prep in secondary school is combined with specialty courses in a chosen field at the postsecondary level.

Unfortunately, not all 2 + 2 programs meet the standards of tech prep education. Some arrangements simply match existing courses and transfer credit from high schools to postsecondary institutions. Some require duplication of courses or loss of credit in the transition. Others are not competency based, in other words, determined from examination of requirements developed in cooperation with future employers. In fact, as many as 90 percent of secondary/postsecondary articulated programs are obviously not tech prep programs. Although many institutions have made commendable beginnings toward implementing the program, their efforts will provide only temporary satisfaction for educators who want a sound and complete program. These programs rest at the foot of the mountain with the great apex lying before them—a truly effective tech prep/associate degree program.

What identifies an ideal tech prep/associate degree program? No one can answer this with authority, and it is likely that the ideal tech prep program has not been developed. There are, however, several guidelines in the Perkins Act and in the definition provided by Dale Parnell, author of *The Neglected Majority* and the originator of the idea of tech prep. Some basic information needed to ensure a genuine tech prep/associate degree (TPAD) program lies in the answers to these questions:

- Does the high school portion of the TPAD curriculum provide a strong, early academic foundation?
- Do the beginning technical courses build on solid academic foundations in math and science?
- Are sufficient employable skills provided in the high school curriculum for graduates who cannot continue as full-time postsecondary students?
- Has the postsecondary portion of the TPAD curriculum been elevated to accommodate the higher academic and skill levels of entering TPAD students?
- Does the postsecondary institution provide a "bridge program" for students not completing secondary tech prep programs?
- Does the program include all segments of the community: education, business/industry, and government?

How does tech prep promote advanced skills? The curricula currently being designed for TPAD programs should begin to provide a "new breed" of workers with advanced skills. Skill-enhanced TPAD programs usually imply that the requirements for the associate degree have been raised and tech prep high school graduates will be required to take a full two-year postsecondary program that provides advanced skills. While much has been implied about advanced skills, little has been offered to clarify what the concept really means. The ideal TPAD program should offer three types of advanced skills:

- **More depth**—The most common interpretation of an advanced-skills curriculum is to provide "more of the same" (i.e., greater exposure to the field and wider variety of skills that build on those already learned). An example of this form of advanced skills in a telecommunications technical program would be to add courses in laser/fiber-optics communication links.
- **More breadth**—This form of advanced skills combines one specialization learned in high school with another at the postsecondary institution (i.e., cross training). An example is combining construction trades with business/management. This model allows for apprenticeship experience and also provides essential knowledge of fiscal control.
- **Build a foundation, build on the foundation**—This core approach builds technical skills on a strong academic foundation. An example of using the core approach in the TPAD curriculum is evident in engineering-tech fields. Electronics is the "common denominator" of the technical curriculum. Current secondary and postsecondary vo-tech electronics programs allow students to progress through several sequential courses before they complete algebra, trigonometry, and physics. This type of technology training without an academic foundation consists mainly of requiring related hand skills, memorizing certain facts about the way things work, and learning certain troubleshooting techniques that are sure to become obsolete as tools and technology advance. Such a beginning does not provide a foundation for achieving more advanced job skills that require problem solving, creativity, and innovation.

Applied academics: A key element. A successful TPAD program has an effective applied academics curriculum. Understanding basic mathematical and scientific concepts is critical to productive living and working in a technological society. Applied academics courses address fundamental principles of productivity, teamwork, and flexibility needed in the workplace.

Four applied academics courses currently being implemented in tech prep programs are Principles of Technology, Applied Mathematics, Applied Biology/Chemistry, and Applied Communications. All these courses consist of student text with lab activities, video, a teacher's guide, To catalyze and inform existing tech prep consortia and to encourage others to form consortia to implement tech prep, the Center of Occupational Research and Development (CORD), in Waco, Texas, formed a National Tech Prep Network in August 1991. The network publishes a monthly newsletter offering broad-based services and resources to its membership, which is composed of local and state consortia, business/industry leaders, and affiliated associations. It provides avenues to discuss trends and innovations in tech prep and to resolve issues that stem from tech prep implementation. Currently, more than 500 educational institutions and individual educators are members of the Network, and the number continues to grow. The Network is hosting its first national conference, March 8-10 in Dallas, Texas. To the degree that educators reach out—not only to each other but also to business, industry, labor, and the general public—TPAD programs will be successful. For more information on the National Tech Prep Network, write to Dan Hull, 601 C Lake Air Drive, Waco, TX 76710.

a bank of test questions, and a resource guidebook.

Principles of Technology is a two-year secondary course in applied physics for students interested in technical careers. The curriculum is designed for comprehensive high schools or vocational-technical centers at tenth- and eleventh-grade levels. Principles of Technology is currently taught in 48 states and two Canadian provinces to over 100,000 students.

Applied Mathematics is a two-year secondary course based on integrated presentation of topics in arithmetic, algebra, geometry, trigonometry, probability, estimation, problem solving, and statistical process control. It is oriented toward application and practice of mathematical concepts and skills in practical world-of-work problems. Applied Mathematics is taught in 48 states to over 80,000 students.

Applied Biology/Chemistry is an integrated, two-year course of competency-based materials that can be infused into existing courses or taught as a separate course. The 12-unit curriculum, designed for ninth and tenth grade, presents biology and chemistry in the context of work, home, society, and the environment. These courses are being taught in 38 states for the first time during the 1991-92 school year.

Applied Communications is a comprehensive course with video-based learning materials designed to help students develop and refine job-related communication skills. The 15 modules can be used in any order, singly with existing communication courses, or together as the basis for a one-year course. Forty-six states now use this curriculum at different grade levels, some infusing it into English courses throughout the four years of high school.

In tech prep, inclusion of applied academic courses provides the opportunity to build a solid foundation in math, science, socioeconomics, and communications in the early part of the high school program and to introduce the concepts of technology on this strong base. From there, the student can advance to a specialty in the last year of the associate degree plan.

Career clusters. To build stronger foundations, provide opportunities for student choice, and increase competency levels, tech prep has adopted a career-cluster approach to curriculum design. This approach is based on the concept that many clusters of occupations require common skills and knowledge. It is possible, therefore, to design a curriculum that has a core of courses common to several related specialties. All students in the cluster take the core classes, approximately 80 percent of the curriculum, and then branch out in specialty areas.

Nationally, four career clusters are prominent: engineering/industrial, information systems, health/human services, and arts/humanities. These clusters can incorporate both tech prep and traditional college prep options since many courses are relevant for both groups of students, as well as those who plan to go directly from high school to employment. The opportunity for students who are pursuing a variety of future plans to merge in much of their high school preparation is a positive feature of clustering.

What ensures a successful TPAD program? Essential to forming a successful TPAD program is the involvement of local employers. Employers who play an active role in the program can pique students' interest and motivate them through helping them become aware of career possibilities and expectations. Taking students beyond the classroom to explore the world of work helps correct preconceived notions, erase misconceptions, and instill practical and realistic ideas about what is expected of them when they finish the TPAD program. Career-awareness activities can be important tools for promoting TPAD and recruiting students for the program.

Most career exploration activities should be conducted well before the final years of high school; some efforts can be especially effective in the elementary and middle grades. Florida has instituted a program entitled "Blueprint for Career Preparation," which exposes children to information about careers and technological developments and gives them access to self-awareness programs. By sixth grade, these students are evaluated in terms of their interests and abilities and counseled on the basis of these evaluations.

The tech prep/associate degree concept offers an answer to America's mandate to improve our educational system. A successful TPAD program promises to upgrade America's front-line workers, improve the productive capacity of entry-level workers, and provide quality education for all our students. TPAD programs can serve as agents of positive change for the American work force, but successful programs require participation and commitment from both the secondary and postsecondary educational establishments, from local employers, and from teachers, parents, and students. ❑

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